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July 1985

95p

SINCLAIR PROGRAMS



**MAX HEADROOM: ARE
THE FLAWS FATAL?**

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**MORDON'S QUEST: WILL IT
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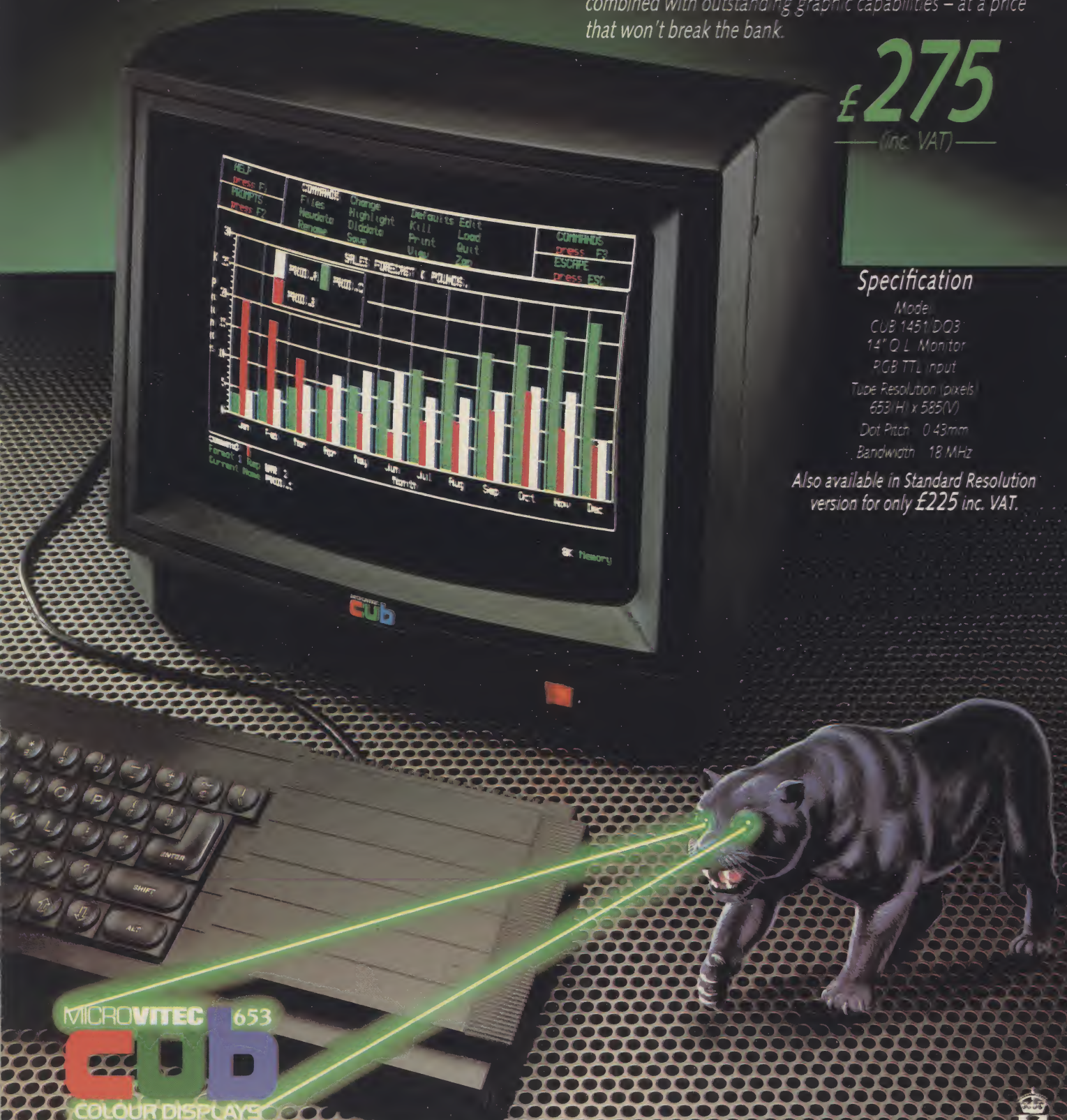
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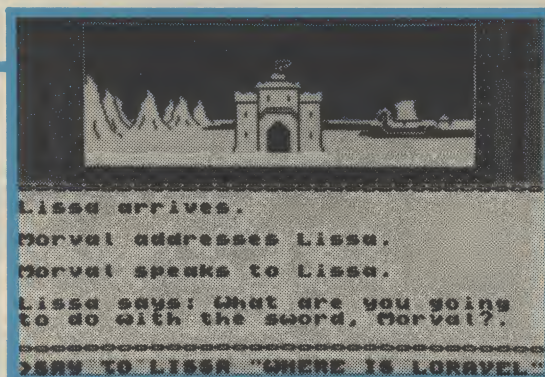
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Max Headroom

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WAY BACK, in the farthest reaches of software history, before **Lords of Midnight**, before **Valhalla**, before **The Hobbit**, was **Adventure**; the first of its kind.



It was originally written for a machine with 200K memory and no graphics capability, but such was its attraction that it has since been developed, modified and converted for the Spectrum.

Melbourne House produced their version, **Classic Adventure**, early in 1984 and by now most Spectrum adventurers will be familiar with its complexities.

Melbourne House have now gone one further and brought out a sequel, called **Mordon's Quest**, which aims to rival the complexity and appeal of the original. We look at this new classic in a special pre-view on page 20.

Also in this issue we interview **Max Healdroom**, the computer generated television presenter. Max asked us to let his public know that he is really not that special, in fact he is very ordinary and mundane; just like them.

We'll be checking the truth of that claim on page 46.



Editor
Rebecca Ferguson

ABC

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Staff writer
Colette McDermott

Design/Illustration
Elaine Bishop

Advertisement manager
Shahid Nizam

Production co-ordinator
Serena Hadley

Advertisement secretary
Maria Keighley

Subscription manager
Carl Dunne

Publisher
Neil Wood

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Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6★isp" means six inverse spaces and "(g4:4★i4:g3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.

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- Popular Computing Weekly 7/3/85

Britain is the Software Capital of the World - far superior to the U.S.A. The computer revolution is just beginning and as the emphasis shifts from hardware to software WE are best placed to shape the future. The writing's on the wall: get actively involved while the industry is young.

(Amstrad, MSX, Atari 800XL, CBM 64, BBC/Electron versions are in preparation.)

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'Incredibly frustrating!' - that's the verdict on Cassette-50's FROGGER. Satisfied users tell us it's one of the most challenging you'll find - it's almost as good as the arcade version! CARGO has you trying desperately to complete your helicopter mission under attack. Plus 48 other tactical, logical and adventure games featuring multi-coloured and user-defined graphics, scrolling and full use of the Spectrum sound capabilities.

No.	Game	No.	Game	No.	Game
1	MUNCHER	18	SKI RUN	36	DRAGGOLD
2	SKI JUMP	19	TANKS	37	SPACE SEARCH
3	BASKETBALL	20	SOLAR SHIP	38	INFERNO
4	FROGGER	21	TEN PINS	39	NIM
5	BREAKOUT	22	CAES	40	VOYAGER
6	CRUSHER	23	STOMPER	41	SKETCH PAD
7	STARTRK	24	PINBALL	42	BLITZ
8	MARTIAN	25	CAVERN	43	FISHING MISSION
9	BOGGLES	26	LASER	44	MYSTICAL
10	ALIEN ATTACK	27	ALIEN	45	DIAMONDS
11	LUNAR LANDER	28	CARGO	46	GALAXY DEFENCE
12	MAZE EATER	29	THE RACE	47	CYPHER
13	MICROTRAP	30	THE SKULL	48	JETMOBILE
14	MOTORWAY	31	ORBIT	49	BARREL JUMP
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16	SKITTLES	33	BOWLS		
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Mega-boring software

I, AS A ZX-81 owner, one of a quarter of a million such people, am becoming very annoyed at the lack of new software available for my machine. The only games which come out of it now are shoot 'em up games which only show up the things wrong with the machine: no sound and low-res graphics.

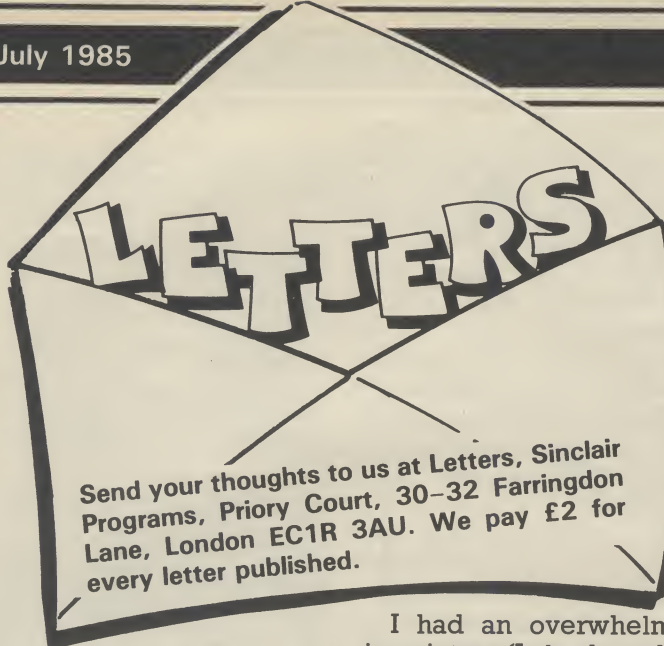
Software Farm's hi-res range looked very original and **Rocket Man** and **Forty Niner** are worth their weight in gold. Unfortunately, the originality has disappeared and Software Farm have brought out the umpteenth version of the mega-boring **Defender**, called **ZXtricator**. The only good thing about it is the graphics. Why they should decide to copy **Defender** is a mystery and, what is more, a waste of the hi-res facility they have developed.

Utility programs are even more scarce than games. One program which is available is the ZX-81 toolkit from **Artic Computing**. I have found it invaluable, and never program without it. It makes up for the gaps on the Sinclair ROM with interest.

Andre Lucas,
Footscray, Kent

Scientists stranded

I WAS given **Airwolf** from Elite for Christmas. I have managed to pass both the first and second walls. When I pass the second wall, however, I can see no way of saving the scientists. My highest score so far is 375. If anyone has any hints on the game, or if anyone has beaten my high score, please let me



Send your thoughts to us at Letters, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. We pay £2 for every letter published.

know via *Sinclair Programs*.

James Hurley,
Middle Tysoe, Warks.

Steve Davis high break

I NEED help! Since I bought **Steve Davis Snooker** I have not been able to play on my computer, it has been commandeered by my brother. He loves the game and plays it all the time. His highest break is 103. Is this a record?

David Ball,
South Shield.

Heartstealer defeated

ON APRIL 14th, 1985 I, with a little help from a friend, finished **Doomdark's Revenge**. It took me four score and six days to bring Luxor, Morkin, Tarithel and Rorthron to the gate of Varemorm and to kill Shareth the Heartstealer.

I had an overwhelming victory (I also bought a crown and a spell) and the watch words of Mid-night were revealed: "The brave and the free fear no foe. Forth, mighty lords of Mid-night! Unto death or victory we go"

I have also finished the **Lords of Midnight** and am now waiting for the **Eye of the Moon** in order to complete the trilogy.

Antonio Manuel.

Controversial keyboards

HAVING READ R Stephen's letter in the April issue concerning ZX-81 keyboards I disagree with his view that raised keyboards are better. I have been programming for three and a half years and I am used to the flat keyboard. Although I experienced difficulty at first, I soon got used to it.

If you slip while playing a game on a raised keyboard there is more chance of pressing a

wrong key than on a flat keyboard. This could crash the game, lose a life or, if you are lucky, you could just scrape away from the alien bomb or whatever.

Also I should like to make the point that I can type faster than my friend, who has one of the **Filesixty** keyboards. So I think that for ten pounds it is a waste of good money which you could spend on software.

Glen Wheeler,
Beaconsfield, Bucks.

Impossible Penetrator

I OWN the game **Penetrator** from Melbourne House. This game cannot be finished.

On the last level there is a piece of mountain which reaches from top to bottom which it is impossible to pass. You cannot change the landscape on the last level.

I have also found another bug in the pro-



gram. While you are on the last level, everything starts changing, blocks start flashing and the program crashes.

Russell Black,
Birmingham.

Please complete this form and enclose it with any program which you send to us for possible publication.

To: Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

I enclose.....Program(s) for thecomputer.

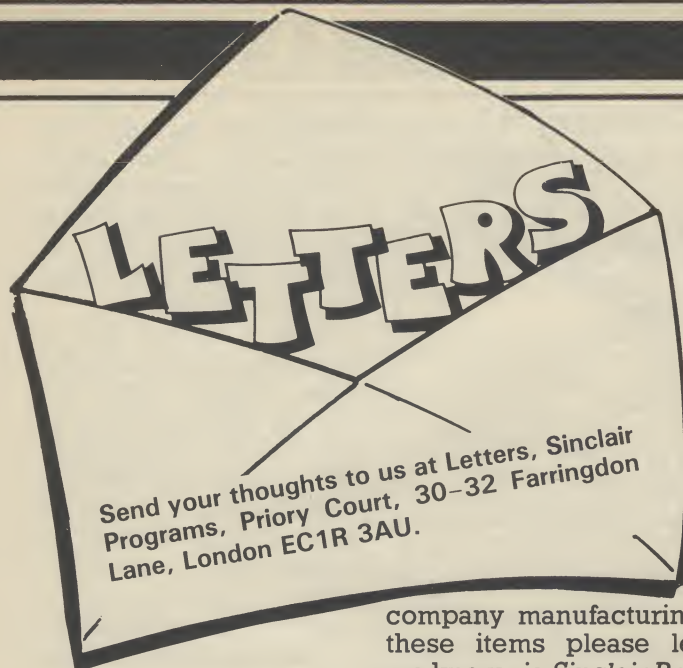
I guarantee that each program submitted is my original work.

Signed

Name

Address

.....



I HAVE had a 16K ZX-81 since Xmas 1983. Last August I purchased **Forty Niner** from Software Farm. My highest score was 16,515. I then bought **ZXtricator**, also from Software Farm.

I loaded it, but it displayed the picture of the Cosmic Cockerel, then crashed. I tried swapping the leads and using different power points, but the same thing happened.

I took it back to the shop and exchanged it for another copy, but the same thing happens every time. If anybody has any tips, please let me know via *Sinclair Programs*. My tape recorder is a Bush computer/cassette recorder.

Andrew Doun,
South Chard, Somerset.

Obliterate mono now

I AM the proud owner of a 16K ZX-81. I should like to improve my ZX-81 further by adding a 16 col-

company manufacturing these items please let me know via *Sinclair Programs*.

C Wooff,
Northallerton, Yorks.

Highly recommended

THE NEW adventure, **Gremlins**, from Adventure International is a brilliant game with amazing graphics which appear on the screen very quickly. I have also found that the hint sheet for which you can send away arrives very quickly and is full of useful hints.

Andy Herrod,
Leatherhead, Surrey.

Drive for success

I HAVE conquered typing errors on the ZX-81. A couple of weeks ago I was typing in a game. My little brother was playing with his cars at the time, and one of them rolled under my palm. I found that it was very easy to type, my hand was moving quick-

much more easy to play fast moving games.

Tim Laundon,
Leicester.

Arrival and departure

AFTER buying **Son of Bigger** from Alligata, I find it very hard to reach any of the keys on level five, although I can easi-

up the banyan tree is blocked by an orange block which should not be there. The following **POKEs** cure the attic bug and remove the orange block. Once removed you can jump into the banyan tree, then jump up and right to reach those elusive bottles.

The official Software Projects modifications are as follows: **MERGE**

Help!

Spiderman: How do you deal with the Ringmaster? How do you remove the fan? **Paul Gibbons.**

ly pass the other four levels. Could someone please explain how to reach these keys?

In **Finder's Keepers** from Mastertronic, I have no idea how to get past the cat. I have tried

"". Stop the cassette recorder at OK prompt. **CLEAR 32767:LOAD""** **CODE ENTER.** After the rest of the program has loaded, enter as direct commands: **POKE 60231,0 POKE 42183,11**

Help!

Pyjamarama: I have reached the moon and entered the room with the magnetic lock. How do I switch off the lock? **M Hughes.**

cheese and the hairy dog, but nothing happens. What do you use to get rid of him? Also, the inlay card says that objects may react with each other to form more useful objects. What are they, and what do they become?

Andrew Bowden,
Taunton, Somerset.

Clear the conservatory

I WAS interested in the letter from Peter Lawrence in the May issue concerning **Jet Set Willy**. As you know, the program is full of bugs, most famous of which is the attic bug. As Peter said there is no way of reaching the bottles under the conservatory roof.

The problem is that the only route into and

POKE 59901,82 POKE 56876,4

To save the modified game **SAVE "Jetset"** **LINE 10: SAVE "JSW"** **CODE 32768,32768**

W Pooley,
Liverpool.



I WOULD like to make one small addition to your accurate review of Ocean Software's **Kong Strikes Back**. You said that it was 'successful and addictive'. I should

Help!

Jack and The Beanstalk/Soft Aid: How can I move from the top of the beanstalk to the castle? I keep falling down. **Lee Davis.**

our board or any other sort of colour board, and a light pen.

If anyone knows of a

ly next to the keyboard and, what is more, the games did not crash. I also found that it became

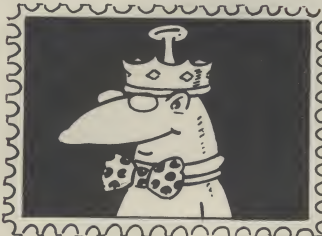
like to add the word 'very' in front of this quote.

What a great game! I would even go so far as to say that it matches its more illustrious Ocean brother, **Daley Thompson's Decathlon**.

Martin McRandal,
Larne, Co. Antrim.

Does anyone know?

Russell Black,
Birmingham.



Help!

Planet of Death: How can I get past the forcefield?
David Bertiaume.

Enter the Spectrum

ON APRIL 11th I played **Bruce Lee** for four hours and scored 1 010 025. Is this a record? I have a Sinclair Spectrum Plus. If anyone has a higher score I should like to hear from them.

Peter Dawson,
Bristol.

Warlords: what is the point?

CAN ANYONE help me? I recently purchased **Warlords** from Century Software. I have been playing it but I have not yet found out what the object of the game is, or how I can achieve it.

I SHOULD like to hear from **Manic Miner** and **Jet Pac** whiz kids who have beaten these two high scores: 30,518 for **Manic Miner** and the staggering score of 11 59 080 for **Jet Pac**. I should like to declare myself king of these two games (unless someone else beats my score, that is).

Fulvio Baiavola,
London SE23

Help!

Sherlock: How do I get to Leatherhead? **Anon.**

Clear ship in Booty

I AM writing to you regarding the **Booty** letter

written by Mark Simpson. I agree with him about **Booty**. It is the only game that I ever play these days.

To answer his questions. Yes, I have reached key five, and my highest score is 125 pieces of **Booty**. After collecting all these you have 45 seconds in which to find a golden key, which I have not managed to do.

Key five looks impossible to reach but it is actually not that hard.

If anyone has found the golden key, let me know where it is. Please!
Simon Haines,
Southampton, Hants.

Goalkeeper's antics

WHILE playing **Match Day** from Ocean I came across an unusual bug. The bug is that, if the football stops in the middle of the goal line, and

which I enjoy very much. When I came to enter the store I found that I was short of money, so I cleverly bought half a pack of bullets by typing 0.5 when asked for quantity. I then went on to buy half a gun.

I tested this by starting a gunfight, and it worked! So, now I have worked out the money problem, but I still have to work out the strength problem.

James Smith,
Colchester, Essex.



I HAVE recently bought **Knight Lore**. I find it extremely hard, for the 3D scenery makes it difficult to judge how far to walk or to jump. Some things disappear and some sink beneath your weight. If anything looks safe you can bet that it is not. My highest score so far is 41% with six charms. If anyone has beaten that score I should like to know.

Eoin McLeod,
Aberdeen.

Brilliant graphics

I HAVE recently purchased the game **Monty is Innocent** and think it is great. I bought the game before reading your review of it. The review said that the graphics were appalling. I think that they are brilliant.

Darren Munn,
Nottingham.

the goalkeeper has dived and is lying on the ground, if the goalkeeper then gets up and stands on the ball no one will then be able to kick the ball. I should like to know whether there is a **POKE** that will solve the bug. I think **Match Day** is an excellent game.

Allan Blackett,
Carlisle, Cumbria.

Wild Bunch bugged

I WAS playing a new game I had bought called **The Wild Bunch**

Help!

Runes of Zendos: How can I kill the monsters? What is the flag in the left hand corner for? **Sarah Hume.**



James Bond

007 is back with a **View To A Kill**.

Bond, James that is, returns this summer in a new film called *A View To A Kill* and a computer game following his adventures has also been produced.

Domark Ltd won the exclusive rights to produce the computer game and the thrill of the kill could not be disguised by the company chiefs Dominic Wheatley and Nigel Boyle.

They describe the game as closely following the plot of the film. There are three games on the tape. The lead-in shows Bond crossing the floor with us watching him through the rifle sight or eye, a shot and the Bond theme tune.

The fun starts in Paris. Bond must stop the evil Max Zorin, electronic whizkid, who plans to steal valuable silicon chips and use them for his own ends. Bond meets an agent high up on the Eiffel Tower. Suddenly a cloaked figure appears, kills the agent and hurls herself from the Tower. Her cloak becomes a parachute and she flies away. Your task is to help Bond pursue her in his car. Features include handbrake turns, shooting police cars and more.

The program includes three games which closely follow the film. In addition, the original music by Duran Duran is expected to be included on the cassette.



Dragonator's 1st High Lorelord

EAMON McGing of Camberley, Surrey, has been awarded a citation by Hewson Consultants for being the first player to finish **Dragonator**.

He finally attained the rank of High Lorelord on April 7th, having bought the game six days earlier.

Hewson have been inundated with requests for clues. If you write, enclosing an sae, and stating where you are

stuck, they will send you a hint sheet. Write to:

Hewson Consultants, 56B Milton Trading Estate, Abingdon, Oxon.

Most callers have come unstuck when they have been bitten by the snakes or spiders. Sometimes the poison can cause tunnel vision; the screen goes blank, leaving only Maroc and the scroll visible. The solution is to use the Healing spell.

Will Nick Faldo's Open play rough?

A GOLF inspired game is to be released in July to coincide with the British Open.

Nick Faldo's Open

from Mind Games will follow the complete Royal St. George's course in detail.

Peter Holme, marketing manager at Mind

Successful Softaid

SOFTAID, at the time of going to press, had sold 75,000 copies, making the total amount donated to the appeal "about £200,000," as Penny Jeffrey, speaking on behalf of the appeal, explained.

"It should top the quarter of a million mark within the next few days," she continued. We've had a report that the HMV shop in Newcastle has already sold 1,000 copies.

Games describes the game. "Using scrolling scenery you control the game from an elevated position. The top two thirds of the screen show the course, the map of the course, your player and the caddy who follows you around handing over clubs and shaking his head when you pick the wrong one."

"The bottom third displays a wind direction scale, angle at which the shot will go when the ball is played, and power-behind-shot scale." You move through each new location taking with you your player and caddy.



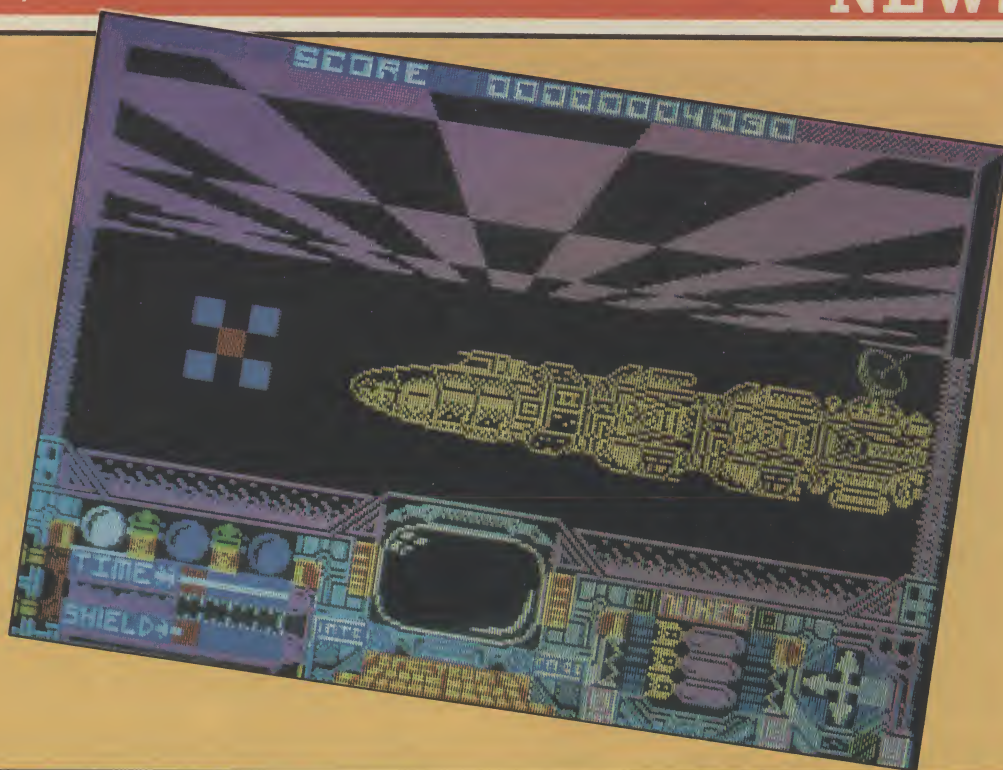
In a glass of its own

PLANET Glass is the setting for the new space arcade game from Quicksilva.

Quicksilva marketing manager Peter Holme describes the new game, **Glass**, as "Very fast, difficult and colourful. It has been designed with all would-be alien-busters in mind."

Set in deep space you must rid the planet of the "Evil force which is inhabiting it."

It goes on sale in mid June and costs £7.99.



KP COLIN GOES SOFT

CLUMSY Colin, Action Biker is featured in a new Mastertronic game, which is being launched with a special promotion run in conjunction with KP foods.

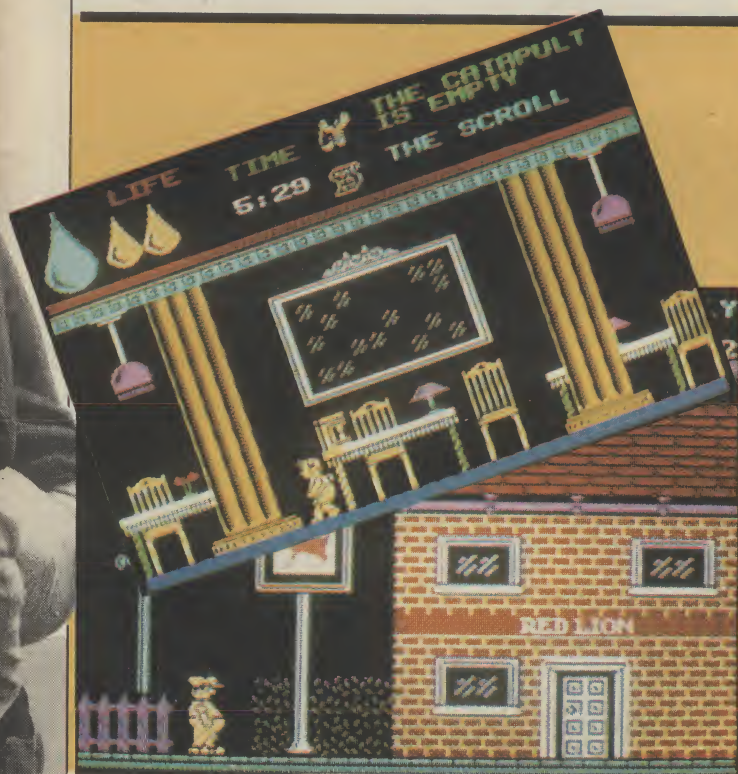
Colin has been a regular character in a comic strip and advertisements

for the food giants.

He stars in this arcade game travelling around 150 houses where various objects such as motorbike parts must be collected.

The game progresses to more difficult levels as your skill improves.

It is to be released at the end of June at the value for money price of £1.99.



HORACE IS RESCUED

TWO NEW arcade games from Melbourne House are to be released for the summer.

The latest program in the Horace series, **Horace to the Rescue** develops the love story. Horace, lucky boy, gets himself a girlfriend.

Unlike the previous series which was produced by Psion, Melbourne House are sole publishers of this game, so we should see some change in presentation.

Way of the Exploding Fist, the second release, is set around the martial art, karate.

Paula Byrne of Melbourne House informs us that they have gone to great trouble to reproduce an authentic game which is far superior to anything currently available.

The game allows the karate player 18 movements and the graphics are very sophisticated.

Tranquil tone

A NEW telephone helpline has been set up to soothe Wally fans.

Mikro-gen have installed this special service and call it the Telephone Tranquiliser.

It has a pre-recorded set of clues which will be updated monthly, including clues to **Everyone's A Wally**.

The number to call is Bracknell (0344) 56447.

Meanwhile, some clues to **Everyone's A Wally**:

1. Dick should visit the Zoo, but make sure he gets the nuts first or he will make a monkey of himself. If he takes the plunger he can fix the fountain.
2. If Harry makes cement with the sand and bucket of water he can build the wall with his trowel.
3. Harry should use his screwdriver to replace the bad insulator on top of the pylon, but you'll need to make a telephone call first.

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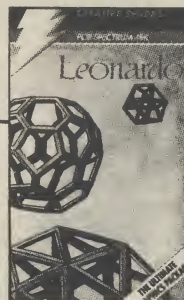
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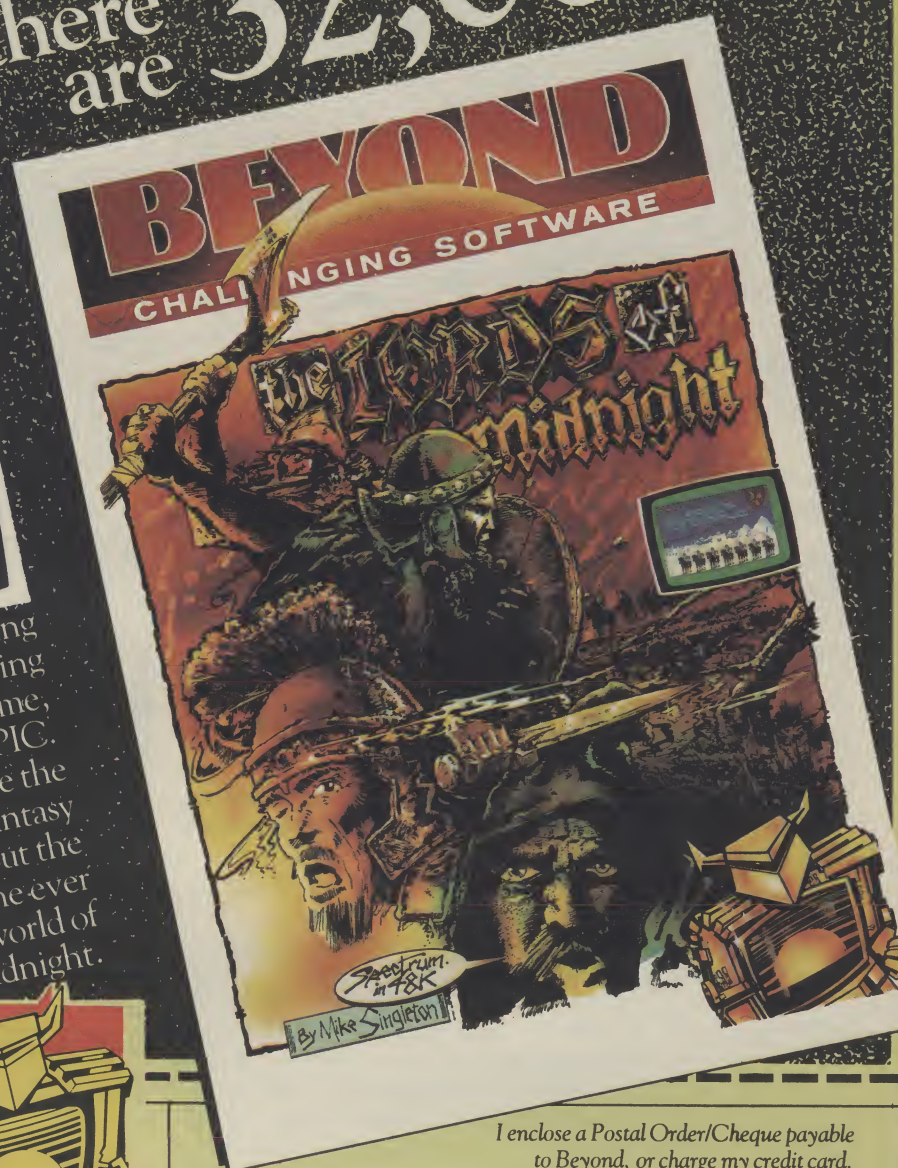
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quickly, and the important decisions can require split second reactions. With less than two hours to complete your mission, it is useless to hang around in safe corners for too long, you must keep on the move.

The initial panic caused by complicated instructions is quite unjustified, for the icons are, in practice, far more easy to use than the restricted and specialist vocabulary required by most adventures. If you are stuck in Shadowfire it is because you are not thinking on your feet, not because the program's vocabulary is inadequate for your needs.

Shadowfire beats traditional adventure, strategy and war programs at their own game. The plot is strong, the graphics excellent and the possibilities endless.

Shadowfire is produced for the 48K Spectrum by Beyond, Lector Court, 151 Farringdon Road, London EC1.

Price: £9.95

Game type: Icon adventure

Rating: 95%

SHADOWFIRE

BYOND have taken the traditional text adventure, smashed it to pieces, thrown it on the scrapheap and put something radically different in its place. **Shadowfire** is a completely text free adventure, allowing quicker decisions, faster movement and more action than ever before.

You control six characters, of varying strengths and capabilities, who must work as a team to board the spaceship Zoff V, locate and rescue the captured Ambassador Kryxix, capture the evil General Zoff and then capture or destroy the entire spaceship. In case you find all this slightly too easy for your taste, you have only an hour and forty minutes in which to accomplish these tasks.

First impression of Shadowfire is of a complex, unapproachable game. Using no text in

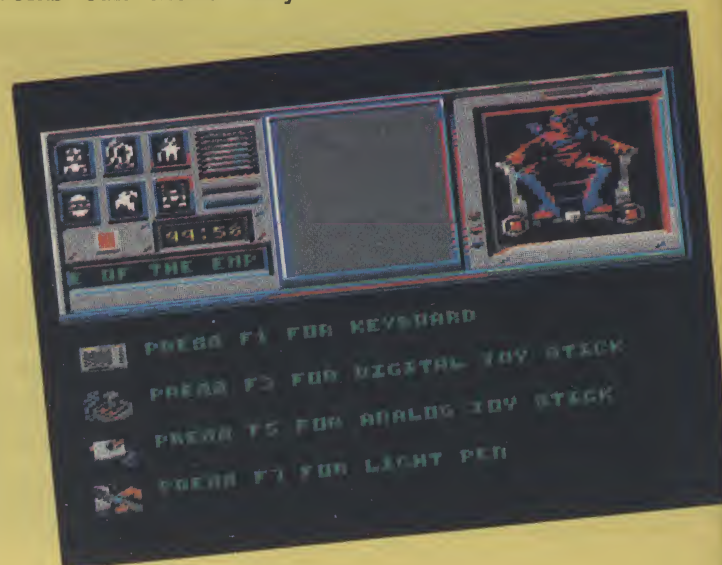
the game has meant that the instruction manual is difficult to follow, especially without the game in front of you. With as many as thirty images on screen at one time, it is essential to understand all of them to be able to progress with the game.

The game is played by the use of icons. For example, to enter battle, you would select the picture of the character you want to move, select the attack icon, pick out the direction in which they should attack, and leave them to it. As with all good adventures, the sequence of events is logical. You must remember to pick up a gun before you attack anyone, and you must remember to choose which of your weapons you are going to use before you lurch blindly at someone.

Strategy is very important in the game.

There is no need to use all the characters together, and you must always bear in mind the different capabilities of each character. It is important to make a map, and it is also important to make the best possible use of the objects you collect.

The use of icons rather than text means that events can move very



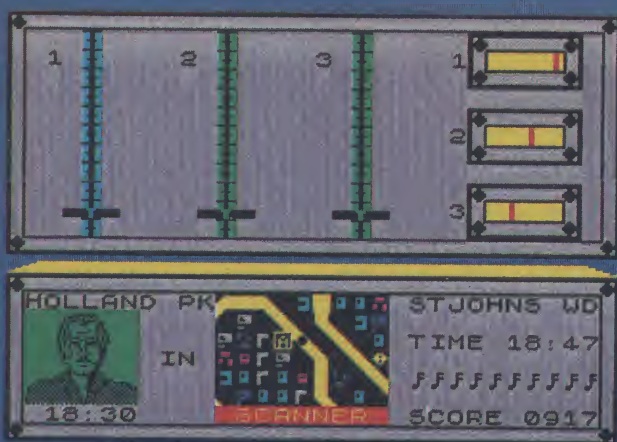
GIVE MY REGARDS TO BROADSTREET

GIVE MY regards to Broadstreet is great fun. Great fun that is, if you disregard the game description and do what you want to do, not what Argus have told you to do.

You play the part of Paul McCartney. It is your task to spend Saturday meeting seven friends, collecting part of a song from each of them, and then taking it back to Abbey Road studios for mixing. Now, if I

the appropriate station and wait outside for them; and wait; and wait. Trouble is, there is not much of a game there either, is there? A certain amount of deduction is fine, but where is the fun in standing outside a tube station all day, waiting for someone who may never emerge?

What the instructions neglect to tell you is that you can grab your friends as they go into the station, as well as



were Paul, I would phone all my friends and meet them at the studios. Not much of a game there, though.

Instead, you have to track them down in the centre of London. By keeping a careful eye on your in-car computer, which tells you when they were last spotted at a tube station; and on your character summary, which tells you where they are likely to spend their days, you are supposed to predict where they will emerge from the tube!

With the help of your London road map you can then drive over to

when they leave. This makes more sense. If, for example, Linda left the tube at Bond Street in order to go shopping, she will have to leave at some time, and five thirty looks like a good bet.

Matters become even more easy when you realise that the characters always play the same game when the program has just been loaded. This means that, after a couple of runs through, you can drive to Kilburn first thing in the morning, pick up part of the tune there, go on to Maida Vale and then head into town.

The game suddenly

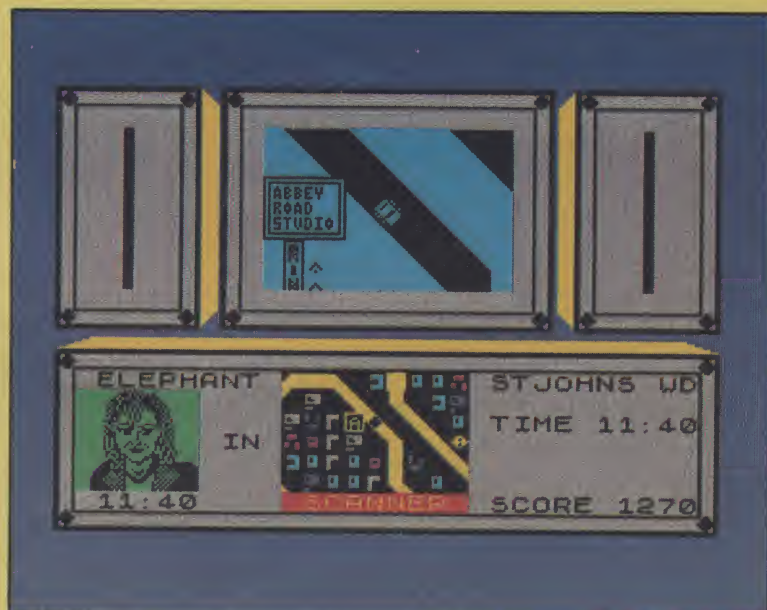
becomes much more fun. Instead of wandering disconsolately past tube stations for hours on end, with no one to talk to except the traffic warden, you can zoom around London, knowing exactly where everyone will be and when. The trick then, becomes to navigate the routes fast enough, to learn to take the bends at speed, and to work out the fastest route from the Elephant and Castle to Camden Town.

Londoners certainly

have a built in advantage over everyone else. After all, if even Paul McCartney has not noticed that there is no tube at Broad Street, what chance is there for anyone else?

Give My Regards to Broadstreet is produced for the 48K Spectrum by Argus Press Software, 222 Regent St, London W1.

Price: £7.99
Rating: 78%

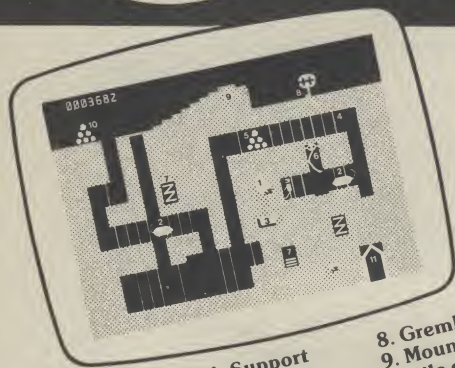




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2. Giant Rats
3. Burrowing Rat
4. Support
5. Cave In
6. Snake
7. Snake Nest
8. Gremlin
9. Mound
10. Pile of Earth
11. Cave

FORTY NINER

In 1849 the Great American Gold Rush started. Almost everyone who could sold up everything and dashed to the west coast to look for this precious metal – including you!

You must excavate this precious metal – but can you survive the giant rats and that vicious Gremlin which will come to infest your mine? Can you trick the snakes into leaving their comfortable nests and destroy the rats for you? Can you keep the Gremlin at bay?

Riches await you – but so do the hazards!

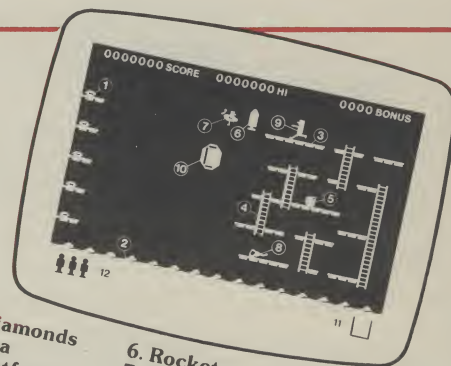
ROCKET MAN

Get rich quick by collecting Diamonds that are simply lying there waiting for you! Oh... I forgot to mention that there are one or two problems!

There is an expanse of shark infested water between you and the Diamonds and a strange breed of Bubble that seems hell bent on getting you in it! Somehow you must cross it...

You have a Rocket Pack to help you (a Vulture on higher levels) but you must rush around the platforms and ladders collecting cans of fuel (legs of lamb with the Vulture) and cursing that weird Bubble. Once you have enough fuel then it's Chocks Away!

Oh... but don't run out of fuel on the way – otherwise it's... SPLASH!



1. Diamonds
2. Sea
3. Platforms
4. Ladders
5. Fuel Cans
6. Rocket
7. Vulture
8. Leg of Lamb
9. Player
10. Bubloid
11. Fuel Gauge
12. Men remaining



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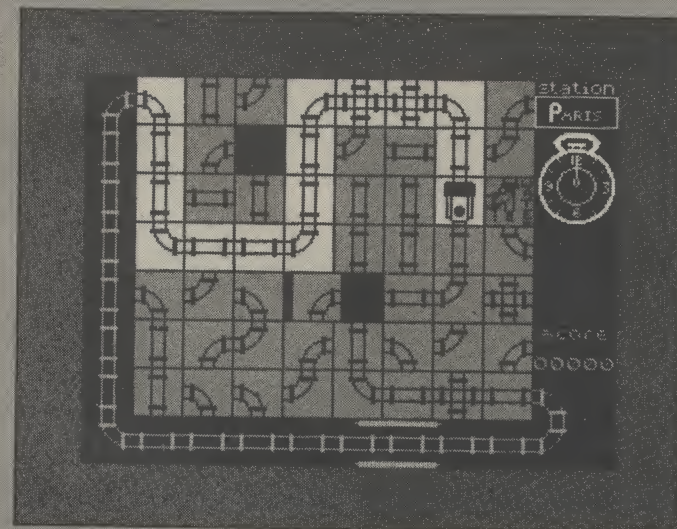
LOCOMOTION

REMEMBER those sliding puzzles you used to win as prizes in lucky dips, or buy for a few pence in the shop on the corner? They contained 15 plastic squares and one empty space. By sliding the squares into the space you could form them into a picture.

Mastertronic have taken up this theme with **Locomotion**. The idea is introduced by an excellent loading screen which starts with a mixed up picture and then shuffles the elements around until the screen is complete.

The aim of the game is to move your train from the top left to the bottom right of the screen by sliding tracks around to keep it on the rails. Moving the track would be straightforward if it were possible to keep a level head, but the train keeps moving, and the pressure is on all the time.

As the levels progress the track becomes more confused and obstacles such as trees begin to appear more frequently. Eventually it is necessary to push the pause button which allows you to hold the train for a minute



whilst you frantically push track around.

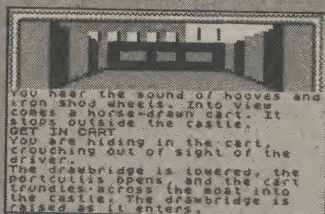
A gripping game, excellent value for money, **Locomotion** is produced for the 48K Spectrum by

Mastertronic, 54 George Street, London W1.

Price: £1.99
Rating: 59%

ASHKERON

IN THE dim and distant past, Stephen the Blacksmith entered the castle of the evil wizard to recover the five stolen treasures of **Ashkeron**. The castle was vast and labyrinthine, its inhabitants numerous and its owner possessed of a cruel sense of humour. Stephen, though, was brave and resolute,



needing only your help to solve the mysteries of the castle.

Ashkeron is a graphics and text adventure, containing pictures of each

location. These are clear and quick to appear but seem to be of little help in the adventure.

Interaction with other characters is important. The stable boy and the executioner seem friendly enough, but the slimy green dwarf proves lethal after a while and will not be put off by your disappearing. Various magical creatures prove a hindrance in your travels,

and the wizard is a real nuisance when it suits him.

There is a lot to do and a lot to explore in **Ashkeron**. Once you have solved the adventure, your next move is to complete it in as few turns as possible.

Produced for the 48K Spectrum by Mirrorsoft, Hoborn Circus, London.

Price: £7.95
Rating: 70%

QUACKSHOT

MID MAY saw the launch of a new range of budget software from EMI called **Sparklers**. First release is **Quackshot**.

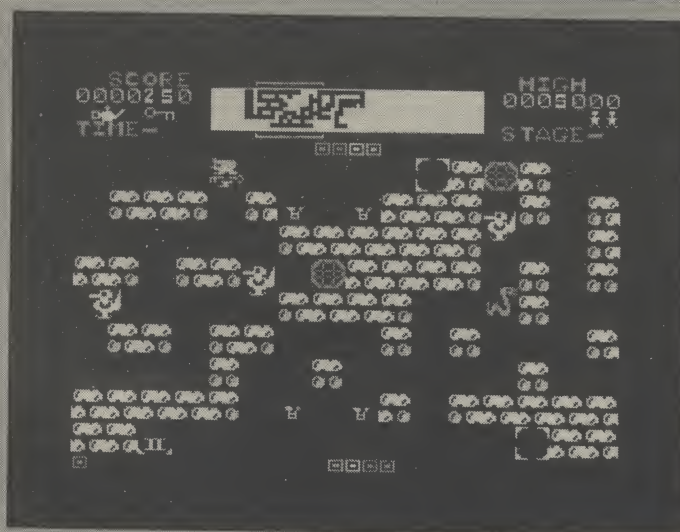
As night watchman in the Acme Toy Factory you must get through your nightly routine of checking in at various points and patrolling the factory, whilst avoiding the lethal windups rolling around the passageways.

The game takes the form of a maze through which you must move,

avoiding as many toys as you can, stunning and bombing the rest. Bonuses can be collected at certain points, as can keys to unlock the doors in your section.

The toys are fast moving and the maze layout complex. Scrolling is screen by screen rather than continuous so, until you know a section of the maze it is possible to be almost on top of one of the toys before you know it.

Not an outstanding game, but certainly



good value at the price, **Quackshot** is produced for the 48K Spectrum by Thorn EMI, 296 Farnborough Road, Farnbor-

ough, Hampshire.

Price: £2.50
Rating: 54%

COMBAT LYNX

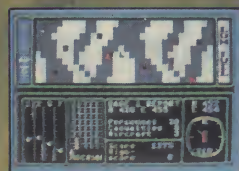
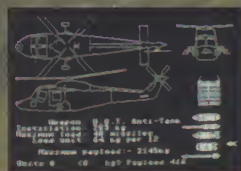
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CATS

IT IS the night of the Jellicle ball. Tonight the leader of all **Cats**, Deuteronomy, will choose one of the cats to be reborn into a new life. Two problems face Deuteronomy this year. The first is that ten kittens have strayed and must be collected. The second is that the cats' bitterest enemies, the Pollicle Dogs, have stolen the source of the Jellicle cats' power. Now they intend to form a pack and destroy it altogether.

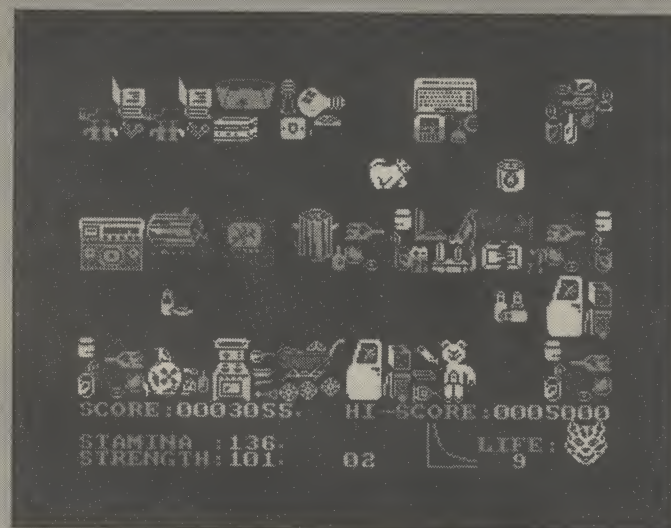
Deuteronomy must make his way through the maze of woodland, town and scrapyards, de-

stroy the dogs, collect the kittens and eat enough food to maintain his strength.

This task is made easy by the introduction of a maze plan which can be viewed at any time. This shows the position of all cats, dogs and kittens and allows efficient routes to be planned quickly and easily.

In line with tradition, Deuteronomy has nine lives. This allows plenty of time to complete all tasks, save the Jellicle cats and defeat the Pollicle dogs.

Cats would prove a good maze game for a newcomer to maze



games, or for the exceptionally fumble-fingered. Experienced players will find it too easy to represent any sort of challenge.

Produced for the 48K

Spectrum by Artic Computing, Main Street, Brandesburton, Driffield.

Price: £6.95

Game type: Maze

Rating: 46%

CONFUZION

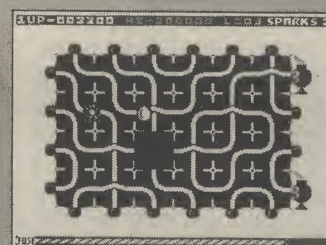
LIKE Locomotion, which is also reviewed in Softspot this month, **Confuzion** takes up the theme of the sliding puzzle in which blocks are slid into order by way of a space on the board.

The aim in Confuzion is to lay a fuse from the bouncing spark to bombs placed around the board. This must be done before the fuse at

the bottom of the screen burns out; and it burns faster whenever you make a mistake.

The fuse patterns are complicated, and there are two pieces of fuse to each block, making it difficult to visualise how the board will look when certain blocks have been moved.

The puzzle is easy on the early levels, with a long time limit and only



one bomb. By the end of the game though, you will be struggling with short time limits, multiple bombs, holes in the board and moving obstacles.

Confuzion does have many points in common

with Locomotion and it is likely that players will prefer whichever they play first. Confuzion is more frustrating, Locomotion is cheaper. Confuzion offers a wider variety of screens but consequently appears more bitty than Locomotion.

Confuzion is produced for the 48K Spectrum by Incentive Software, 54 London Street, Reading.

Price: £6.95

Rating: 54%

CHOCOLATE FACTORY

CHARLIE and the Chocolate factory is a singular book, which looks bound to convert to an original computer game. Hill MacGibbon have done such a conversion in five parts. Four games chart the fates of those obnoxious characters Augustus Gloop, Violet Beauregarde, Veruca Salt and Mike Teavee while the fifth and longest game takes you through the chocolate factory.

The first four games

are simple arcade-style puzzles. Mike Teavee, for example, involves a platforms and ladders style game while Veruca Salt tries out a game reminiscent of **Breakout**. Augustus Gloop has the most original game, in which you must twist the pipes of a fantastic machine in order to steer Augustus to safety.

The arcade games, although difficult, hold no long term appeal, and fail to catch the anarchic humour of the book.

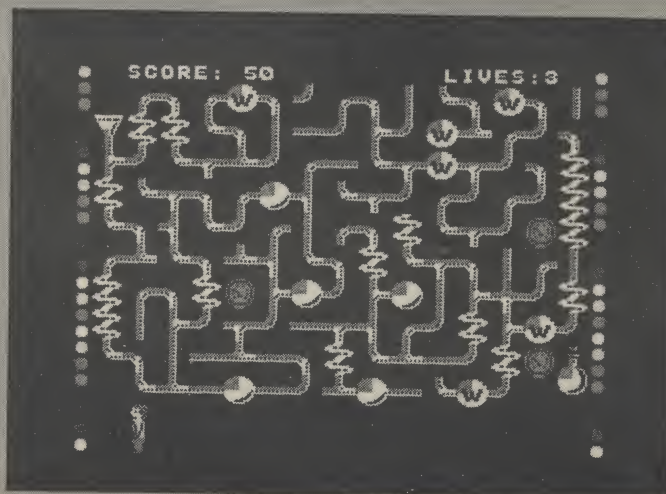
Charlie and the Chocolate Factory comes complete with the original book by Roald Dahl.

Produced for the 48K

Spectrum by Hill MacGibbon, 8 Grafton Street, London W1.

Price: £9.95

Rating: 53%



Questline

Runestone from Games Workshop

Cathy Foot has just saved the world from its doom. Here she suggests how you can help Morval do the same.

MY FIRST thought, on receiving the pre-publication copy of **The Runestone**, was that Games Workshop were set up to cash in on the Role Playing Game and on the **Lords of Midnight** trilogy from Beyond Software but, after a reasonable exposure to the game, I think I must admit that their similarities come from the fact that they are all based on **Dungeons & Dragons**.

One of the better points of Runestone is that, since there are three characters available, it CAN be played as a three player game — if you can agree on the length of any one turn!

The Runestone is very similar in character to the Lords of Midnight series and, as I know to my cost, is as difficult to map, since, although it boasts of "about 2000 locations, most of which may be visited", the sheer scale of such a game world as depicted on the Spectrum makes many of the locations indistinguishable one from the other. This can lead to problems if you are distracted while mapping, since it is not always possible to remember just how many squares of beechwood, open ground or water you have already committed to the map. All in all, I got lost on mapping runs more times than I like to think of, and can only hope that the result was worth it. Happily, the map I received with the game was sufficiently detailed for most journeys, else I would never have got the flavour of the game.

If you are doing a mapping run,

I am not sure which is worse, falling into the water (splash!!!), to emerge dripping wet, or for ever parking the boat and walking off it without ever intending to — Morval, at least, has no thought of either swimming or wading to the OTHER side of any water he might encounter — once I found me a Dragonship, it did seem that the most logical thing to do was to use it to map the river banks and the edges of the lake and the sea.

Slowly but surely the Dungeons & Dragons type role playing games are being translated to the computer-assisted small screen and I do believe that this one has its mite to add to the whole. In The Runestone you have the choice of playing Morval, who is "a dab hand with a sword", Eliador "a crack shot with a bow and arrow" or Greymarel, a wizard of sorts — all you are told about him is that he is the only one of the party capable of casting spells. All three must be present at Kordormir's fortress in order to defeat him and bring the game to an end, which can be done with as little as 40% of the total score available.

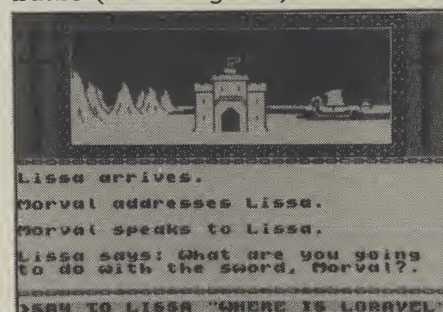
One thing I hope comes with the final booklet is a reasonable vocabulary. I received instructions on movement, on deleting or recalling commands and on changing between the three characters, but not a single clue, apart from the text shown on a couple of pictures taken from the screen.

The trick is to use good ol' "say to". They may not respond, but they will have heard you, and you will escape being sneered at by the computer. One thing, DO use "say TO", just "say" has you muttering to yourself — you cannot address the world at large.

Among the characters you will meet along your way, by far the most annoying is Skrimnal the Sly, who will steal you blind as soon as look at you — sooner, perhaps. He is referred to in the fact sheet I

received as being "another problem"; his presence annoyed me so much that I occasionally forgot that you can neither kill nor be killed in this universe, and did my best to delete Skrimnal the Slimy from the list of characters as permanently as possible.

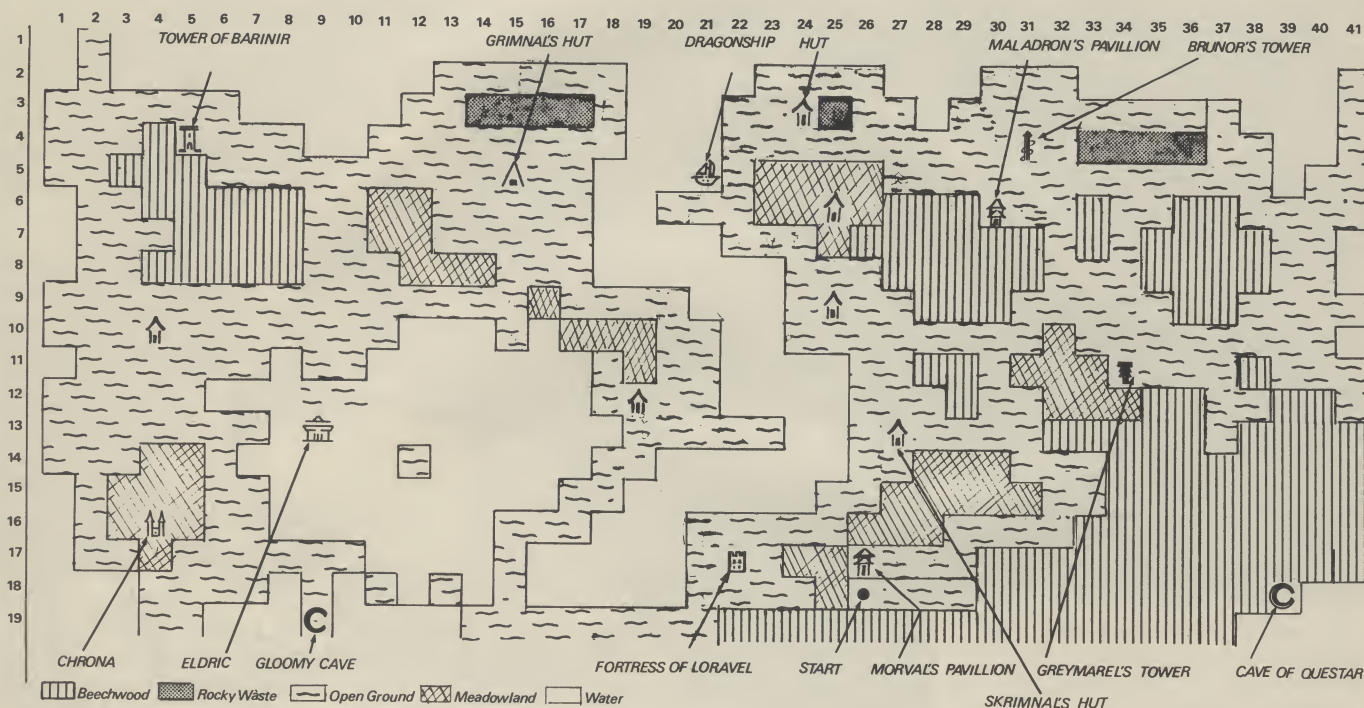
On one occasion he annoyed me while I was keeping uneasy company with a group of orcs. I aimed a blow at Skrimnal, then another, but, unfortunately for me, he dodged behind an orc, who, having taken the full brunt of the blow aimed at Skrimnal, was most annoyed and joined into the melee closely followed by his compatriots and there was I, in the middle of a full-scale battle (for this game) and all be-



cause Skrimnal could not keep his light fingers to himself!

If ever he starts enthusing about some item in his possession, you had better check your belongings — what he is holding was probably yours, and you had better get it back smartish-like. It is no good just trying to repossess your lost item, you will simply be told that it is not available at that time. Tell Skrimnal to drop everything and then give him his marching orders. That will get him out of your hair long enough for you to repossess your goods in peace.

My first attempt to change to running Eliador came at an unfortunate moment in his life. I took him over just as six orcs wandered unopposed into his tower where he was chatting with Lissa and Greymarel. These uninvited guests were later joined by



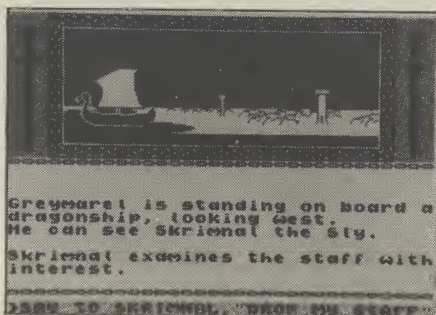
Skrimnal, who was most certainly not invited — frankly, I preferred the company of the orcs, but, as it was, we ended up duffing each other over while Skrimnal beat a hurried, but not a permanent, retreat.

Each of the three characters you can choose start from a recognised point, after that, it is up to you — save the world, or act the tourist whilst it digs its own grave! Just remember, as long as one of your characters is mobile, you are still in with a chance. Food and drink are essential there as here. Unfortunately, so is money — get that coin from Lissa, Maladron the Merchant holds bread and wine but is not into this charity thing. Money up front is his bag, honesty is not — be careful, you have been warned! There is a bottle of real jungle juice to get those groggy fighters back on their feet, while the Book and Staff are as essential equipment for Greymarel as the Sword, Shield and Hauberk for Morval or the Bow and Arrow for Eliador. If Eliador gets in first shot, you have a better chance to duff up those orcs!

Morval is the muscle, he needs to collect his shield and some coin, but the others have to get the party together if they are going to Save the World. Try sending Eliador to collect Eldric and

Chrona (don't forget the potion) and Greymarel, WITH his staff, to have a chat with Questor. They can all rendezvous at Loravel's fortress, before dropping in on Brunor for provisions, and inviting him to join you.

If you are mounting a full-scale expedition, Barinir can also be persuaded to join you in your quest. Perhaps you take a boat trip to his place. Eliador and Greymarel are not great fighters but are targets for the orcs, who look to Kordomir for orders. Un-



less you are into mounting rescue parties, the group is safer at sea. Don't worry if they are kidnapped, though — Morval is well capable of saving them and the world.

The Tower in the Sea is important, a heartless group could leave Chrona there — but make sure she has completed her task before you leave her to the winds of fate. Jobs to do on setting foot in the Northern Wastes include col-

lecting the inevitable ring of power, and rescuing any of the party who have been made captive by the orcs, before heading off to find Saromundor and the Talisman — for this you need Greymarel who alone can defeat Saromundor. There is also the statutory Ancient Manuscript to find before Kordomir can be destroyed.

While your main task is the perennial one of Saving the World from its Doom, extra score can be made by recovering the stolen treasure of Belorn. In fact you seem to be able to achieve a higher score by regaining the treasure than from saving the world — a 60-40 split! Oh, one more thing, your success will be celebrated in countless ballads and tales which will echo through the centuries.

I append a variorum edition of a verse from one of the ballads: it is said that this holds major clues as to how the valourous trio destroyed the power and being of Kordomir the Dark:-

The one may be its bearer. It may be
That two shall draw their comfort from its sight.
But three shall wield its power, and shall see
The Talisman of Zaphoril end the night.


```
8500 OVER 0: LET cd=1: LET de=0:
LET fd=0: LET mh=0: LET st=500:
INK 6: BORDER 0: LET m=500
8505 PRINT AT 2,2;"5 - Decrease
8 - Increase": AT 4,10;"0 -
```



```

Select"
8510 LET pq=50: LET s$="Digging
Equipment Sets": GO SUB 8800: LE
T de=de+a
8520 LET pq=200: LET s$="Men To
Hire": GO SUB 8800: LET mh=mh+a+
1
8540 LET pq=20*mh: LET s$="Food
& drink Sets": GO SUB 8800: LET
fd=fd+a
8560 LET cd=0: LET m2=m: LET pq=
1: LET m=fd: LET s$="Feed men? (
AMOUNT)": GO SUB 8800: LET m=m2:
LET fd=fd-a: LET st=st+a*100
8700 GO SUB 9045: RETURN
8800 POKE 23659,1: LET a=0: PRIN
T OVER 0: AT 22,0;s$;"": TAB 3
2
8810 LET i$= INKEY$: PRINT INK
6: OVER 0: AT 22,0+ LEN s$+2: I
NK 3;a;" ": IF i$ <> "" THEN BE
EP .08,0
8820 IF i$="5" AND a>0 THEN LET
a=a-1: LET m=m+pq
8830 IF i$="8" AND m-pq >= 0 THE
N LET a=a+1: LET m=m-pq
8880 IF i$="0" THEN POKE 23659,
2: INPUT "": RETURN
8885 IF i$ <> "" AND cd THEN PR
INT PAPER 6: INK 2: OVER 0: AT
18,2;"Money Left:": INVERSE 1;m;
PAPER 0;"(2*isp)"
8890 GO TO 8810
8900 RETURN
9000 OVER 0: PAPER 0: BORDER 0:
INK 7: CLS
9010 PRINT BRIGHT 1: PAPER 1;" "
"
9022 FOR f=1 TO 20: LET x= RND *
31: LET y= RND *19+1: LET z= RND
*3+1
9030 LET c= INT ( RND *2): PRINT

```



```

OVER 0: AT y,x: INK z: CHR$ (1
54+c): NEXT f
9040 PRINT AT 21,0: BRIGHT 1: P
APER 1: INK 7: OVER 0;"# ME
N: STAMINA: "
9045 PRINT OVER 0: INK 7: BRIGH
T 1: PAPER 1: AT 21,1;m;" ": AT
21,1;mh
9050 RETURN
9100 FOR f= USR "a" TO USR "m"+
7: READ a: POKE f,a: NEXT f
9120 DATA 16,48,95,129,a,95,48,1
6,252,132,136,132,162,209,10,4

```

```

9130 DATA 24,36,66,231,36,a,a,60
,63,33,17,33,69,139,80,32,8,12,2
50,129,a,250,12,8,32,80,139,69,3
3,17,33,63,60,36,a,a,231,66,36,2
4,4,10,209,162,132,136,132,252

```

```

9140 DATA 126,129,153,165,a,153,
129,126,24,36,66,-1,129,153,a,-1

```

```

9150 DATA 8,8,20,12,22,42,95,8,1
2,54,75,215,110,40,12,8,129,90,5
2,18,82,60,90,129
9400 RETURN

```

To collect a vast quantity of jewels you must cross the fifteen rooms of a Scottish castle. Each of these rooms is inhabited by a monster which must be avoided. From time to time the monsters will drop bags of gold, tempting you to take a risk by trying to pick them up.

To enter line one you should originally enter 1 REM 00000. Then enter as direct commands POKE 16514,62 POKE 16515,0 POKE 16516,237 POKE 16517,71 POKE 16518,201.

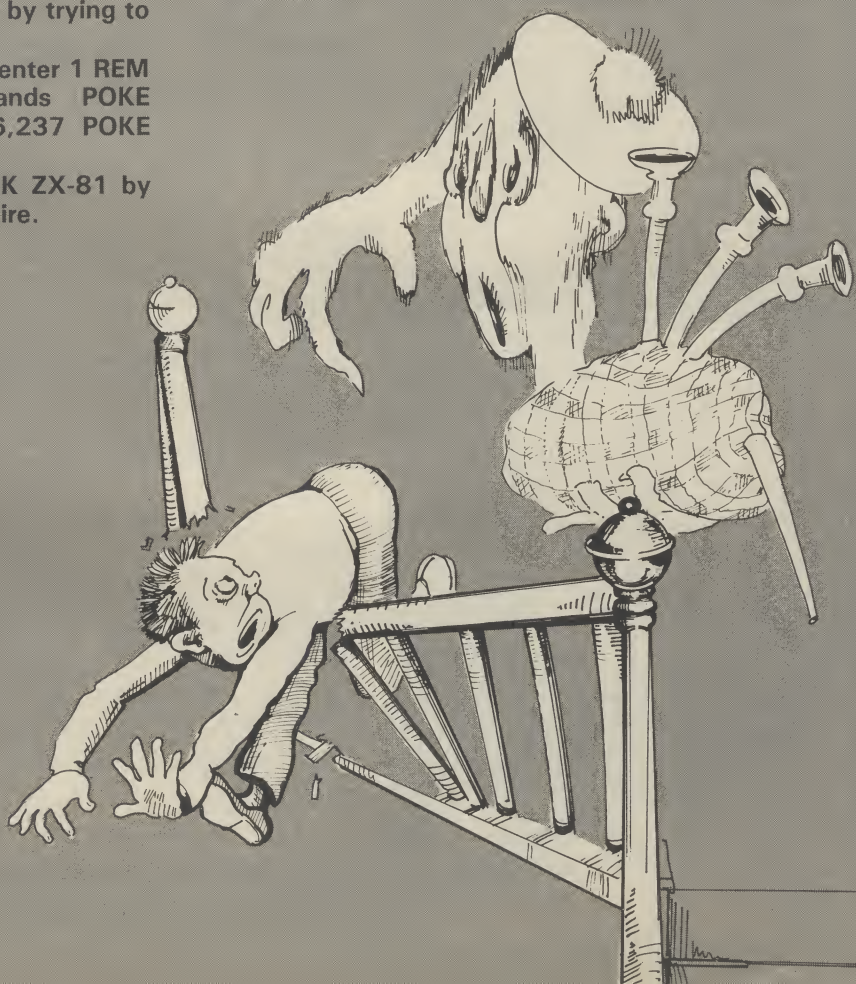
Horror House was written for the 16K ZX-81 by Michael Chadwick of Heywood, Lancashire.

```

1 REM Y2 GOSUB ?TAN
2 LET J=1
3 LET L=1
4 GOSUB 500
5 PRINT " LEVEL ";L,," BAGS O
F GOLD=";GOLD
6 GOSUB 1000
7 CLS
8 POKE 16515,J
9 RAND USR 16514
10 LET A=2
11 CLS
12 GOSUB 300
13 RAND
14 LET T=0
15 LET X=X+.5
16 LET B=2
17 LET D=20
18 LET E=30
19 LET U=A
20 LET V=B
21 LET R=D
22 LET S=E
23 PRINT AT A,B;A$;AT D,E;B$
24 LET B=B+(INKEY$="8" AND B<3
0)-(INKEY$="5" AND B>1)
25 LET T=T+1
26 IF T=50 THEN GOTO 200
27 LET A=A+(INKEY$="6" AND A<2
0)-(INKEY$="7" AND A>1)
28 LET I=INT (RAND*X)+1
29 IF I=1 THEN GOTO 90
30 LET D=D+(D<A)-(D>A)
31 IF I<3 THEN GOTO 95
32 LET E=E+(E<B)-(E>B)
33 IF A=D AND B=E THEN GOTO 15
0
34 PRINT AT U,V;" ":AT R,S;" "
35 IF INT (RAND*20)=10 THEN GOT
O 750
36 IF A=RR AND B=SS THEN GOTO
850
37 PRINT AT RR,SS;CHR$ (INT (

```

Horror House



LISTING



```

RND*60)+1) AND RR(>0)
110 GOTO 50
150 CLS
153 POKE 16515,30
155 RAND USR 16514
160 PRINT "DEAD",,,,,"YOU MADE I
T TO LEVEL ";L
165 PRINT "YOU HAD ";50-T;" TIM
E UNITS LEFT TO FINISH THE LE
VEL"
167 PRINT ,,"YOU COLLECTED ";GO
LD;" BAGS OF GOLD"
169 PRINT ,,"TOTAL SCORE=";L*GO
LD
170 PRINT "ANY KEY TO PLAY"
180 IF INKEY$="" THEN GOTO 180
185 CLS
190 RUN
200 CLS
205 POKE 16515,30
210 RAND USR 16514
220 LET L=L+1
225 LET J=J+2
230 GOTO 5
300 IF L=1 THEN LET A$="?"
305 LET B$="A"
320 IF L=2 THEN LET A$="E"
330 IF L=3 THEN LET A$="U"
340 IF L=4 THEN LET A$="N"
350 IF L=5 THEN LET A$="6"
360 IF L=6 THEN LET A$="8"
370 IF L=7 THEN LET A$="D"
380 IF L=8 THEN LET A$=","
390 IF L=9 THEN LET A$="T"
400 IF L=10 THEN LET A$="Z"
410 IF L=11 THEN LET A$="2"
420 IF L=12 THEN LET A$="3"
430 IF L=13 THEN LET A$="E"
440 IF L=14 THEN LET A$="2"
450 IF L=15 THEN LET A$="U"
455 IF L=16 THEN GOTO 600
460 RETURN
500 CLS
510 PRINT "
E"
520 PRINT ,,"YOU ARE A SECRET
SPY WHO HAS BEEN SENT TO AN
OLD MANSION IN SCOTLAND.YOU HAV
E BEEN TOLD THAT THE PLACE I
S HAUNTED WITH MANY MONSTERS AN
D PEOPLE.YOUR JOB IS TO MAKE I
T SAFELY TROUGH THE MANSION AND
REPORT AT YOUR OFFICE.THE MONST
ERS WILL CHASE YOU.AFTER 50 TIM
E UNITS THE MONSTER GIVES UP
CHASE AND YOU MAKE IT ON TO T
HE NEXT LEVEL. THERE IS 15 LEVE
LS"
525 PRINT ,,"WATCH OUT,ITS GETS

```

```

HARDER EVERY LEVEL"
526 PRINT "ANY KEY TO CONTINUE"
527 IF INKEY$="" THEN GOTO 527
528 CLS
529 PRINT "YOU ALWAYS START AT
THE TOP CORNER,AND THE MONST
ER ALWAYS STARTS AT THE BOTTOM
THE GAME USES HIGH-R
GRAPHICS.THE MONSTER
DROP BAGS OF GOLD WH
ICH WILL KEEP CHANGING SHAPE.
WHEN THE MONSTER DROPS THE GO
LD THE PREVIOUS GOLD DISSAP
EARS. SOMETIMES THERE IS G
OLD ALREADY THERE.
530 PRINT ,,"USE CURSOR KEYS TO
MOVE"
540 PRINT ,,"ANY KEY TO PLAY"
543 LET GOLD=0
545 LET X=1
546 LET AR=0
547 LET SS=0
550 IF INKEY$="" THEN GOTO 550
570 CLS
580 RETURN
600 POKE 16515,30
610 CLS
620 RAND USR 16514
630 PRINT "WOW,YOUVE DONE IT,AN
D YOUVE FOUND SOME JEWELS,YO
U REPORT BACK TO BASE AND GET
A PROMOTION"
640 FOR G=1 TO 100
650 NEXT G
655 CLS
660 FOR I=1 TO 30
670 POKE 16515,I
680 RAND USR 16514
690 NEXT I
700 PRINT "ANY KEY TO PLAY AGAI
N"
710 IF INKEY$="" THEN GOTO 710
715 CLS
720 RUN
751 PRINT AT RR,SS;" "
755 LET AR=R
756 LET SS=S
770 FOR I=1 TO 9
780 PRINT AT RR,SS;CHR$ I
790 NEXT I
800 GOTO 110
850 FOR I=1 TO 10

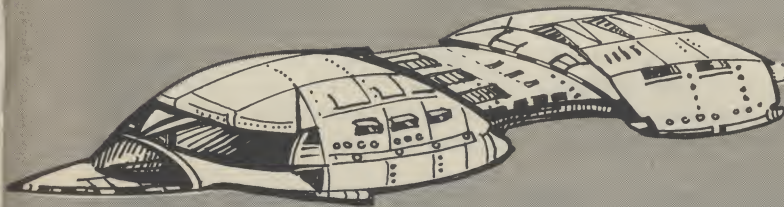
```

```

860 POKE 16515,I
870 RAND USR 16514
880 NEXT I
890 POKE 16515,J
900 RAND USR 16514
910 LET GOLD=GOLD+1
920 LET AR=0
930 LET SS=0
940 GOTO 110
1000 DIM K$(16,18)
1010 LET K$(1)="THE MAD HATTER"
1020 LET K$(2)="THE CHINESE KILL
ER"
1030 LET K$(3)="MR HOUVER BOUVER
"
1040 LET K$(4)="THE GUNNER"
1050 LET K$(5)="DEATH SLICER"
1060 LET K$(6)="THE DALEK"
1070 LET K$(7)="THE SQUIRM"
1080 LET K$(8)="THE WOLF"
1090 LET K$(9)="THE DOOM TANK"
1100 LET K$(10)="THE CELLAR DWEL
LER"
1110 LET K$(11)="THE TURANTULA"
1120 LET K$(12)="THE CYCLOPS"
1130 LET K$(13)="THE MANSION GUA
RD"
1140 LET K$(14)="THE SKULL"
1150 LET K$(15)="THE MASTER"
1160 LET K$(16)="THE EXIT"
1165 IF L=16 THEN RETURN
1170 PRINT ,,"YOU ARE IN THE RO
OM OF",, "A;K$(L)
1180 IF INKEY$="" THEN GOTO 1180
1190 RETURN
9997 STOP
9998 SAVE "H"
9999 RUN

```


EMERGENCY



Automatic landing equipment on your space ship has failed, and it is left to you to take on manual control and bring the ship down safely on the moon. Control the fuel you use carefully in order to make a safe landing.

Emergency was written for the 16K ZX-81 by C Gough of Greenford, Middlesex.

```
1000 DIM Y$(3)
1010 PRINT "HOUSTON CONTROL CALL
ING APOLLO 99."
1014 FOR J=1 TO 40
1020 PRINT AT 9,6;"THIS IS AN EM
ERGENCY"
```

```
1021 PRINT AT 9,6;"THIS IS AN EM
ERGENCY"
1022 NEXT J
1025 CLS
1030 PRINT "YOUR AUTOMATIC LANDI
NG COMPUTER HAS CRASHED AND MANU
AL CONTROL IS NECESSARY."
1031 PRINT
1040 PRINT "YOU MAY RESET THE FU
EL BURN RATE TO ZERO OR TO ANY VA
LUE BETWEEN 8 AND 200 LBS PER SE
COND."
1041 PRINT
1050 PRINT "YOUR CAPSULE WEIGHS
32500 LBS AND YOU HAVE 16000 L
BS OF FUEL."
1051 PRINT
1060 PRINT "THE ESTIMATED FREE-F
ALL IMPACT TIME IS 120 SECONDS."
```

```
1061 PRINT
1070 PRINT "THE RADAR WILL INFOR
M YOU OF YOUR STATUS EVERY 10
SECONDS."
1071 PRINT
1080 PRINT "GOOD LUCK APOLLO 99."
1081 PRINT
1083 PRINT "PRESS ANY KEY TO CON
TINUE."
```

```
1086 IF INKEY$="" THEN GOTO 1086
1225 CLS
1300 PRINT AT 7,0;"ENTERING MANU
AL CONTROL"
```

```
1310 PRINT
1320 FOR R=5 TO 0 STEP -1
1330 PRINT AT 15-R,12-R;R
1335 PAUSE 20
1340 NEXT R
1500 LET A=120
1525 LET L=0
1550 LET V=1
1600 LET M=33000
1700 LET N=16500
1750 LET G=.001
1800 LET Z=1.8
2100 SCROLL
```

```
2101 PRINT AT 17,0;"TIME ALTI
TUDINE"
2102 PRINT "SECS MILES/FEET M
LBS"
2103 PRINT
2105 PRINT L;TAB (7);INT (A);TAB
(12);INT (5280*(A-INT (A)));TAB
(19);INT (3600*V);TAB (26);INT
(M-N)
```

```
2106 SCROLL
2107 PRINT
2108 SCROLL
2109 SCROLL
2110 PRINT "ENTER NEW FUEL RATE"
```

```
2120 SCROLL
2275 INPUT K
2285 PRINT AT 20,22;"=" ;K
2290 SCROLL
2300 LET T=10
2700 IF K<0 THEN GOTO 2720
2701 IF K>200 THEN GOTO 2720
```

```
2702 IF K<8 THEN GOTO 2710
2703 IF K>8 THEN GOTO 3100
2710 IF K=0 THEN GOTO 3100
2720 PRINT "THIS IS NOT POSSIBLE"
```

```
2725 SCROLL
2728 PRINT
2730 SCROLL
2740 GOTO 2110
3100 IF M-N<.001 THEN GOTO 4100
3200 IF T<.001 THEN GOTO 2105
3300 LET S=T
3400 IF N+G*K<M THEN GOTO 3500
3450 LET S=(M-N)*K
3500 GOSUB 9100
3550 IF I<=0 THEN GOTO 7100
3600 IF V<=0 THEN GOTO 3800
3700 IF J<=0 THEN GOTO 8100
3800 GOSUB 6100
3900 GOTO 3100
4100 CLS
```

```
4105 PRINT "YOUR FUEL RAN OUT AF
TER ";L;" SECONDS."
4110 PRINT AT 9,6;"IMPACT IS IMM
INENT"
4200 PAUSE 100
4400 LET S=(SQR (V*V+2*A*G)-V)/G
4500 LET U=V+G*S
4600 LET L=L+S
4700 GOTO 5103
5100 REM LANDING PROCEDURE
5103 CLS
5105 PRINT "YOU LANDED ON THE MO
ON AFTER ";INT (L);" SECONDS."
```

```
5115 LET W=INT (3600*V)
5117 PRINT
5120 PRINT "THE IMPACT VELOCITY
WAS ";W;" MPH"
5130 PRINT
5250 PRINT "THE AMOUNT OF FUEL L
EFT IS ";INT (M-N);" LBS"
5260 PRINT
5300 IF U>10 THEN GOTO 5500
5400 PRINT "CONGRATULATIONS THAT
WAS A PERFECT LANDING....."
```

```
5401 PRINT
5450 GOTO 5900
5500 IF W>20 THEN GOTO 5600
5550 PRINT "NOT BAD COULD BE BET
TER."
5555 PRINT
5575 GOTO 5900
5600 IF W>30 THEN GOTO 5700
5650 PRINT "THAT WAS A DREADFUL
LANDING...."
5655 PRINT
5675 GOTO 5900
5700 IF W>70 THEN GOTO 5800
5750 PRINT "YOU HAVE SUFFERED EX
TENSIVE CRAFT DAMAGE AND COU
LD NEVER RETURN TO EARTH...."
```

```
5755 PRINT
5775 GOTO 5900
5800 PRINT "YOU LANDED MUCH TOO
FAST. YOUR CRAFT EXPLODED AND T
HERE WERE NOSURVIVORS."
5820 PRINT
5850 PRINT "IN FACT YOU CREATED
A NEW CRATER";INT (W*.27777);" F
EET DEEP"
5860 PRINT
5870 PRINT
5900 PRINT "TRY AGAIN? Y/N"
```

```
5965 IF INKEY$="Y" THEN GOTO 122
5970 IF INKEY$="N" THEN GOTO 598
0
5975 GOTO 5950
5980 PRINT
5981 PRINT "THIS IS HOUSTON CONT
ROL SAYING OVER AND OUT....."
5985 STOP
6100 LET L=L+S
6200 LET T=T-S
6300 LET M=M-S*K
6400 LET A=I
6500 LET V=J
6600 RETURN
7100 IF S<.005 THEN GOTO 5100
7200 LET S=2*A/(V+SQR (V*V+2*A*(
6-Z*K/M)))
7300 GOSUB 9100
7400 GOSUB 6100
7500 GOTO 7100
8100 LET W=(1-M*G/(Z*K))/2
8150 LET S=M*V/(Z*K*(W+SQR (W*W+
V/Z)))+.05
8250 GOSUB 9100
8300 IF I<=0 THEN GOTO 7100
8400 GOSUB 6100
8500 IF J<=0 THEN GOTO 3100
8600 IF V<=0 THEN GOTO 8100
8700 GOTO 3100
9100 LET Q=S*K/M
9200 LET J=V+G*S+Z*(-Q-Q**2/2-Q*
*3/3)
9400 LET I=A-G*S*5/2-V*S+Z*S*(Q/
2+Q**2/6+Q**3/12)
9500 RETURN
9999 STOP
```



THE DUEL is a two player game in which the players must each use their skill and judgement to destroy their opponent. The game is divided into three sections, including fifteen skill levels. Player one uses Z,X,C and V to move and CAPS SHIFT to fire, while player two uses 6,7,8 and 9 to move and 0 to fire.

In game one, use the movement keys to deflect the ever moving fireball. Lives left are represented by the energy rings

numbers are eight numbers of machine code.

To make typing easier, the numbers have been divided into blocks of 32. Before you type anything, switch on CAPS LOCK. At this point you can do four things. Enter a block number and then enter the 32 numbers for that block. Enter the four letters SAVE and save to tape what you have entered. Enter the four letters LOAD to load back what you have already typed. Enter the four let-

hear a BEEP and you will then return to the stage where you are asked for a block number.

Once you have entered all the blocks, type SAVE to save the tape, and then QUIT. Now load listing three. This will check what you have taped and, if all is well, will save a final copy to tape; place this after listing one.

If you receive the message ERROR IN DATA STATEMENTS, check the numbers in the data section of listing three and then

THE DUEL

around you. A life is lost if the fireball passes you and reaches the edge of the screen.

In game two, guide your laser bike over a 64x64 grid, avoiding your trail and your opponent's trail. To make matters more difficult, you can only see a small portion of the grid at any one time.

In game three, move your tank around the maze. Press the fire key to launch a missile at your opponent. Lives are represented by coloured squares at the bottom of the screen.

To enter

Enter and SAVE listing one. Take another tape, enter and SAVE listings two and three. Now reload listing two, and RUN it. Look at listing four, this is the machine code that makes up the game, written in hexadecimal form. The number on the far left is the block number, the next is the address in memory of the machine code and the next eight

ters QUIT to tell the computer that you have finished.

If you select the first option by entering a block number, you will be confronted by a display which looks rather like listing four. Try typing in a few numbers to see what happens. Notice that if you



press enter without entering a number, the next number that you enter will be the first number in the next row of eight.

If you make a typing error and receive the report B: Integer out of range, type RUN. You will find that the numbers are still there. Look at the numbers on the black background above the numbers that you typed in. These are the numbers that were there before you entered your numbers.

Once you have entered all numbers in one block you will

listing one

```
10 CLEAR 26999: LOAD "DUEL CO
DE " CODE
20 BORDER 1: PAPER 0: INK 6: R
ANDOMIZE : CLS
30 RANDOMIZE USR 27000: GO TO
30
9999 SAVE "THE DUEL" LINE 0: SAV
E "DUEL CODE " CODE 27000,31523
-27000
```

save it to tape once again. Now rerun it.

If the program tells you that there is an error in one of the blocks, make a list of the block number, reload listing two and run it. Enter the block number you have been given, and correct the mistakes in that block. Repeat this exercise until the computer tells you that all is well. After saving it, you can load and run listing one which will load the machine code and allow you to play the game.

Duel was written for the 48K Spectrum by Roger S Allen of Gerrards Cross, Bucks.

listing two

```
10 CLEAR 26999
20 DEF FN x$(x)=( CHR$ (48+x)
AND x<10)+( CHR$ (55+x) AND x>9)
30 DEF FN x(x$)=( CODE x$-48 A
ND x$ <= "9")+( CODE x$-55 AND x
$ >= "A")
40 INPUT "BLOCK NUMBER? "; LIN
E a$: IF a$="QUIT" THEN BEEP 2,
5: STOP
50 IF a$="SAVE" THEN BEEP 1,3
0: SAVE "DUEL CODE " CODE 27000
,4523: GO TO 40
60 IF a$="LOAD" THEN BEEP 1,1
0: LOAD "DUEL CODE " CODE : GO
TO 40
70 IF LEN a$ <> 2 THEN BEEP
```

```
.1,0: GO TO 40
80 GO SUB 210: LET h=27000+y*3
2: LET a=y: GO SUB 180: PRINT a$
;" "
90 FOR n=0 TO 3: IF n <> 0 THE
N PRINT " ";
100 LET a= INT ((h+8*n)/256): L
ET b=h+8*n-256*a: GO SUB 180: PR
INT x$: LET a=b: GO SUB 180: PR
INT x$;" "
110 FOR f=0 TO 7: LET a= PEEK (
h+8*n+f): GO SUB 180: PRINT " ";
INVERSE 1;x$: NEXT f
120 PRINT "" "": FOR m=0
TO 7
130 INPUT "HEX.? "; LINE a$: IF
```

```
a$="" THEN BEEP .1,-10: PRINT
: GO TO 160
140 IF LEN a$ <> 2 THEN BEEP
.1,0: GO TO 130
150 PRINT " ";a$: GO SUB 210:
POKE (h+8*n+m),y: NEXT m
160 NEXT N: BEEP 1,20: PRINT ""
: LET h=h+32: GO TO 40
170 STOP
180 LET x= INT (a/16): LET y=a-
x*16
190 LET x$= FN x$(x)+ FN x$(y)
200 RETURN
210 LET y=16* FN x(a$(1))+ FN x
(a$(2))
220 RETURN
```


listing three

```
10 DEF FN x$(x)=( CHR$( 48+x)
AND x<10)+( CHR$( 55+x) AND x>9)
```

```
20 RESTORE : LET x=0: FOR n=0
TO 141: READ a: LET x=x+a: NEXT
n: IF x <> 414061 THEN PRINT A
T 10,4;"ERROR IN DATA STATEMENTS
": STOP
```

```
30 RESTORE : FOR n=0 TO 141
40 LET x=0: FOR m=27000 TO 270
31: LET x=x+ PEEK (m+n*32)
```

```
50 NEXT m: READ a: IF a <> x T
HEN LET a=n: GO SUB 90: PRINT
AT 10,7;"ERROR IN BLOCK ";x$: ST
OP
```

```
60 LET a=n: GO SUB 90: PRINT
AT 5,7;"BLOCK ";x$;" VERIFIED":
NEXT n
```

```
70 PRINT AT 10,5;"VERIFICATIO
N COMPLETE": AT 15,6;"NOW SAVING
TO TAPE"
```

```
80 SAVE "DUEL CODE " CODE 270
00,4523: STOP
```

```
90 LET x= INT (a/16): LET y=a-
x*16
```

```
100 LET x$= FN x$(x)+ FN x$(y)
```

```
110 RETURN
```

```
120 DATA 2891,3226,2589,3083,45
28,2903,3266,3130,2695,2727,2232
```



```
,2536,2016,4432,3065,4164,2908,2
296,2705,2942,3501
```

```
130 DATA 4172,4293,4546,4501,47
62,3021,3398,4155,3717,3051,4008
,3193,4437,3343,3963,4352,2594,2
343,2615,4041,3377
```

```
140 DATA 3968,3599,2963,3919,30
83,2027,2386,2582,4668,3642,3719
,3292,2482,2706,4358,4648,4172,3
774,2887,3625,4656
```

```
150 DATA 2469,2659,2046,2883,29
35,3189,3809,4012,3940,3149,3744
,2856,3560,3481,3450,3312,3260,2
```

```
453,3147,3083,1921
```

```
160 DATA 2412,3777,3204,4460,39
34,3359,3778,3254,3655,4190,3683
,3349,3392,2233,3702,4252,4896,4
251,1718,3918,2957
```

```
170 DATA 2031,1356,1637,1862,77
3,467,749,1232,1664,1951,1368,18
73,1104,1199,851
```

```
180 DATA 1061,1453,2095,2298,21
68,2452,1821,1838,2194,1769,2314
,2276,2600,1999,1916,1479,310,67
5,138,548,3969,1966
```

listing four

```
00 6978 CD 6B 0D 3E 32 CD 76 70
```

```
6980 21 CB 58 3E 01 16 10 1E
```

```
6988 02 CD DD 6F 3E 64 11 81
```

```
6990 6B 01 41 8C CD 21 6B 3E
```

```
01 6998 CB 13 01 41 90 CD 21 6B
```

```
69A0 01 18 25 CD D9 0D 21 93
```

```
69A8 6B CD 7A 70 CD 74 70 01
```

```
69B0 1C 1A CD D9 0D 21 A6 6B
```

```
02 69B8 CD 7A 70 AF 32 08 5C 06
```

```
69C0 07 21 88 58 3E 02 16 10
```

```
69C8 58 CD DD 6F 0E 28 76 3A
```

```
69D0 08 5C A7 20 08 0D 20 F6
```

```
03 69D8 05 20 E6 18 E2 21 04 04
```

```
69E0 22 BF 76 21 30 30 22 C5
```

```
69E8 6B CD 06 6A CD E2 74 CD
```

```
69F0 06 6A 21 6A 70 36 00 E5
```

```
04 69F8 CD 7C 71 E1 36 04 CD 06
```

```
6A00 6A CD D6 6B 18 E3 3E F0
```

```
6A08 06 FA F5 CD FA 6F 78 D6
```

```
6A10 0A 47 F1 B8 20 F4 D6 0A
```

```
05 6A18 20 EE CD 6B 0D 06 32 CD
```

```
6A20 76 70 3A BF 76 A7 20 3B
```

```
6A28 3E 32 32 CF 6B 21 00 58
```

```
6A30 3E 14 16 20 1E 03 CD DD
```

```
06 6A38 6F 01 18 67 11 CB 6B 3E
```

```
6A40 32 CD 21 6B 21 08 5C 36
```

```
6A48 00 06 00 CD FA 6F 78 ED
```

```
6A50 44 47 CD FA 6F 78 ED 44
```

```
07 6A58 C6 05 47 3A 08 5C A7 28
```

```
6A60 EA C1 C9 3A C0 76 A7 20
```

```
6A68 04 3E 31 18 BD 21 C6 6B
```

```
6A70 7E 3C FE 3A 20 05 2B 34
```

```
08 6A78 23 3E 30 77 2B 7E 23 FE
```

```
6A80 30 20 69 7E FE 31 20 07
```

```
6A88 21 02 59 3E FE 18 44 FE
```

```
6A90 32 20 0C 21 01 91 11 F4
```

```
09 6A98 71 ED 53 DA 71 18 70 FE
```

```
6AA0 33 20 0C 21 03 21 11 43
```

```
6AA8 6C ED 53 2E 6C 18 60 FE
```

```
6AB0 34 20 05 21 03 85 18 57
```

```
0A 6AB8 FE 35 20 05 21 02 59 18
```

```
6AC0 4E FE 36 20 05 21 04 B1
```

```
6AC8 18 45 FE 37 20 0A 21 02
```

```
6AD0 59 3E 04 32 DE 76 18 37
```

```
0B 6AD8 FE 38 20 08 21 01 91 11
```

```
6AE0 DC 71 18 B5 21 03 21 11
```

```
6AE8 30 6C 18 BD FE 31 20 1C
```

```
6AF0 7E FE 30 20 05 21 03 85
```

```
0C 6AF8 18 15 FE 31 20 05 21 02
```

```
6B00 59 18 0C FE 32 20 05 21
```

```
6B08 04 B1 18 03 21 05 14 22
```

```
6B10 BD 76 11 BF 6B 01 47 67
```

```
0D 6B18 3E 96 CD 21 6B CD 74 70
```

```
6B20 C9 32 6E 6B D5 CD AA 22
```

```
6B28 D1 1A FE FF 20 06 06 14
```

```
6B30 CD 76 70 C9 D5 E5 E5 ED
```

```
0E 6B38 4B 36 5C 26 00 6F 29 29
```

```
6B40 29 09 D1 3E 08 08 E5 D5
```

```
6B48 7E 06 08 1F F5 CB 1A CB
```

```
6B50 1B F1 CB 1A CB 1B 10 F3
```

```
0F 6B58 E1 72 23 73 CD 9F 70 73
```

```
6B60 2B 72 CD 9F 70 D1 EB 23
```

```
6B68 08 3D 20 D9 76 06 32 CD
```

```
6B70 FA 6F 78 C6 14 47 CD FA
```

```
10 6B78 6F E1 23 23 D1 13 C3 29
```

```
6B80 6B 5F 5F 5F 5F 5F 5F
```

```
6B88 5F FF 54 48 45 20 44 55
```

```
6B90 45 4C FF 10 07 11 00 42
```

```
11 6B98 59 20 52 4F 47 45 52 20
```

```
6BA0 41 4C 4C 45 4E FF 10 04
```

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6BA8 50 52 45 53 53 20 41 4E
```

```
6BB0 59 20 4B 45 59 20 54 4F
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```
12 6BB8 20 42 45 47 49 4E FF 52
```

```
6BC0 4F 55 4E 44 20 30 37 FF
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```
6BC8 50 4C 41 59 45 52 20 32
```

```
6BD0 20 57 49 4E 53 FF 11 A7
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13 6BD8 76 21 02 77 01 0E 00 ED
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6BE0 B0 CD 6B 0D 21 00 58 11
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```
6BE8 07 20 3E 18 CD DD 6F CD
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6BF0 E6 6C 3E 10 D7 3E 04 D7
```

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14 6BF8 01 02 2D C5 CD D9 0D 3E
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6C00 8F D7 3E 8F D7 C1 05 78
```

```
6C08 FE 18 20 EF 3E 10 D7 3E
```

```
6C10 07 D7 DD 21 03 78 06 97
```

```
15 6C18 0E 18 CD AE 6C 79 C6 20
```

```
6C20 4F FE F8 20 F5 78 D6 20
```

```
6C28 47 FE F7 20 EB C3 43 6C
```

```
6C30 21 C2 6C 7E 23 4E 23 FE
```

```
16 6C38 FF 28 08 E5 47 CD AE 6C
```

```
6C40 E1 18 F0 21 BF 76 11 E4
```

```
6C48 5A 3E 03 CD DF 6C 21 C0
```

```
6C50 76 11 F5 5A CD DF 6C CD
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```
17 6C58 74 70 11 AF 76 01 FE EF
```

```
6C60 C5 CD 25 70 DD 2A B3 76
```

```
6C68 CD 3A 6F DD 22 B3 76 C1
```

```
6C70 11 B5 76 CD D0 6E CD F0
```

```
18 6C78 6D 06 FF CD FA 6F 11 AA
```

```
6C80 76 01 FE FE C5 CD 25 70
```

```
6C88 DD 2A B1 76 CD 3A 6F DD
```

```
6C90 22 B1 76 C1 11 B9 76 CD
```

```
19 6C98 D0 6E CD F0 6D 06 FA CD
```

```
6CA0 FA 6F 01 13 17 CD D9 0D
```

```
6CA8 CD 8C 70 CB 18 AC CD C5
```

```
6CB0 70 C5 CD AA 22 C1 CD DB
```

```
1A 6CB8 0B 3E 02 57 1E 16 CD DD
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```
6CC0 6F C9 67 18 47 18 87 38
```

```
6CC8 27 38 57 48 67 58 77 68
```

```
6CD0 37 88 47 98 57 A8 87 88
```

```
1B 6CD8 27 88 67 D8 47 D8 FF 46
```

```
6CE0 12 13 13 10 FB C9 01 21
```

```
6CE8 2E CD D9 0D CD 2A 6D 01
```

```
6CF0 21 18 CD D9 0D CD 2A 6D
```

```
1C 6CF8 DD 2A B1 76 ED 4B A7 76
```

```
6D00 78 41 4F CD C5 70 DD 2A
```

```
6D08 B3 76 ED 4B AC 76 78 41
```

```
6D10 4F CD C5 70 01 1E 2E CD
```

```
1D 6D18 D9 0D 21 DF 76 CD 7A 70
```

```
6D20 01 13 17 CD D9 0D CD 8C
```

```
6D28 70 C9 3E 04 32 8F 5C 06
```

```
6D30 40 3E 8F D7 10 FB C9 E5
```

```
1E 6D38 D5 2A 76 5C 54 5D 29 29
```

```
6D40 29 19 29 29 19 22 76 5C
```

```
6D48 7C D1 E1 C9 1E 1E 21 00
```

```
6D50 7C CD 37 6D FE 0E 30 F9
```

```
1F 6D58 E6 0F 57 D6 07 ED 44 77
```

```
6D60 78 92 57 23 CD 37 6D E6
```

```
6D68 0F F5 D6 07 77 F1 81 23
```

```
6D70 72 23 77 2B C5 CD D9 6D
```

```
20 6D78 C1 23 23 1D 20 D3 06 28
```

```
6D80 21 00 7C 0E 1E E5 C5 3E
```

```
6D88 29 90 C6 14 CB 27 CB 27
```

```
6D90 47 CD FA 6F 78 C6 0A 47
```

```
21 6D98 CD FA 6F CD 37 6D 47 CD
```

```
6DA0 FA 6F C1 E1 C5 56 23 5E
```

```
6DA8 23 CD D9 6D 78 82 FE CB
```

```
6DB0 38 01 AF FE 9F 38 02 3E
```

```
22 6DB8 9F 47 70 79 83 FE F7 38
```

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6DC0 02 3E F7 FE 08 30 02 3E
6DC8 08 4F 23 71 28 CD D9 6D
6DD0 23 23 C1 0D 20 CE 10 A8

23 6DD8 C9 E5 D5 46 23 4E C5 CD
6DE0 AA 22 47 04 3E FE 0F 10
6DE8 FD AE 2F 77 C1 D1 E1 C9
6DF0 7E A7 20 0A CD 1F 74 01

24 6DF8 B0 04 CD 23 74 C9 1A F5
6E00 CD F5 6E E5 62 6B E5 CD
6E08 82 70 E1 D1 78 82 47 79
6E10 83 4F 70 23 71 23 34 F1

25 6E18 E5 3D 20 15 78 D6 07 57
6E20 79 C6 0E 5F CD 1F 6F 20
6E28 56 15 CD 1F 6F 20 50 18
6E30 45 3D 20 15 50 15 15 79

26 6E38 C6 08 5F CD 1F 6F 20 06
6E40 1C CD 1F 6F 28 30 14 18
6E48 36 3D 20 17 78 D6 07 57
6E50 59 1C 1C 1C CD 1F 6F 20

27 6E58 06 15 CD 1F 6F 28 17 1D
6E60 1D 18 1C 78 D6 0D 57 79

6E68 C6 08 5F CD 1F 6F 20 0F
6E70 1C CD 1F 6F 20 09 CD C5

28 6E78 70 E1 46 CD FA 6F C9 E1
6E80 7D FE 88 20 0C 21 AE 76
6E88 01 A7 76 DD 2A B1 76 18
6E90 0A 21 A9 76 01 AC 76 DD

29 6E98 2A B3 76 36 00 0A 14 14
6EA0 14 3C BA D8 D6 0C BA D0
6EA8 03 0A 3C 3C BB D0 C6 0C
6EB0 BB D8 60 69 2B CD 82 70

2A 6EB8 D1 E5 CD 4C 6D E1 7D FE
6EC0 A9 20 05 21 BF 76 18 03
6EC8 21 C0 76 35 CB C3 D6 6B
6ED0 ED 78 46 23 4E 23 CB 47

2B 6ED8 C0 7E A7 C0 36 01 E5 23
6EE0 7E 12 D5 CD F5 6E 78 12
6EE8 79 13 12 13 3E 1E 12 CD
6EF0 C5 70 D1 E1 C9 13 3D 20

2C 6EF8 08 DD 21 6F 7A 21 02 00
6F00 C9 3D 20 08 DD 21 94 7A
6F08 21 00 02 C9 3D 20 08 DD
6F10 21 B9 7A 21 FE 00 C9 DD

2D 6F18 21 DE 7A 21 00 FE C9 C5
6F20 42 4B 7A FE FA 38 02 18
6F28 0F D5 E5 CD AA 22 47 04



6F30 7E 07 10 FD E6 01 E1 D1

2E 6F38 C1 C9 62 6B CD 82 70 23
6F40 7E 23 3D 20 18 50 15 15
6F48 79 C6 0F 5F CD 1F 6F 20
6F50 0A 7A D6 0B 57 CD 1F 6F

2F 6F58 20 01 0C 11 8F 79 18 54
6F60 3D 20 1A 50 15 59 1C 1C
6F68 1C CD 1F 6F 20 0A 7B C6
6F70 0B 5F CD 1F 6F 20 01 04

30 6F78 11 AF 78 18 37 3D 20 1A

6F80 50 15 15 59 1C 1C CD 1F
6F88 6F 20 0A 7A D6 0B 57 CD
6F90 1F 6F 20 01 0D 11 FF 79

31 6F98 18 1A 78 D6 0E 57 59 1C
6FA0 1C 1C CD 1F 6F 20 0A 7B
6FA8 C6 0B 5F CD 1F 6F 20 01
6FB0 05 11 1F 79 CD C3 6F 2B

32 6FB8 2B 2B 71 2B 70 E5 CD C5
6FC0 70 E1 C9 7E FE FD 20 04
6FC8 D5 DD E1 C9 11 25 00 DD

6FD0 19 DD 7E FB FE FF C0 11
33 6FD8 91 FF DD 19 C9 F5 7A 32
6FE0 E9 6F 78 32 EB 6F F1 E5
6FEB 16 20 36 03 23 15 20 FA
6FF0 E1 11 20 00 19 3D 20 EF

34 6FF8 5F C9 AF B8 20 01 04 4F
7000 0C 80 30 FC CB 21 CB 21
7008 3A 48 5C CB 2F CB 2F CB

7010 2F CB E7 D3 FE 60 25 20

35 7018 FD CB A7 D3 FE 60 25 20
7020 FD 0D 20 ED C9 ED 78 CB
7028 4F 20 04 06 01 18 16 CB
7030 57 20 04 06 02 18 0E CB

36 7038 5F 20 04 06 04 18 06 CB
7040 67 20 21 06 03 1A B8 F5
7048 7B FE AF 78 28 0D FE 03
7050 30 04 C6 02 18 02 D6 02

37 7058 C1 B8 F5 12 F1 28 05 13
7060 3E FF 12 18 13 1A 3D 3D
7068 12 18 04 47 CD FA 6F 18
7070 1B 1B 1B C9 06 64 76 10

38 7078 FD C9 7E FE FF C8 23 D7
7080 18 F8 46 23 4E E5 CD B5
7088 70 E1 23 C9 21 BD 76 46
7090 23 4E 0B 71 2B 70 78 FE

39 7098 FF CB CD 28 1A A7 C9 24
70A0 7C E6 07 C0 7D C6 20 6F
70A8 3F 9F E6 F8 84 67 C9 2B
70B0 7C B5 20 FB C9 78 DD BE

3A 70B8 FB 76 38 09 DD 6E FC DD
70C0 66 FD CD AF 70 C5 DD E5
70C8 3E AF 90 30 0C 47 37 1F
70D0 A7 1F A7 1F CD B7 22 18

3B 70D8 03 CD AA 22 DD 5E FE DD
70E0 46 FF CB 20 CB 20 CB 20
70E8 3C 4B E5 C5 FE 05 30 10
70F0 4F DD 56 00 06 00 3F CB

3C 70F8 1A CB 18 0D 20 F9 18 18
7100 16 00 DD 46 00 D6 08 ED
7108 44 28 09 3F 4F CB 10 CB
7110 12 0D 20 F9 D6 08 ED 44

3D 7118 DD 23 4F 7E AA 77 23 7D
7120 E6 1F 20 09 7D D6 20 FE

7128 E0 20 01 25 6F 7E A8 77
7130 79 C1 0D 20 B6 4F 7D E1

3E 7138 CD 9F 70 79 10 A8 DD E1
7140 C1 C9 F5 D5 C5 CD 23 73
7148 47 3E 03 CD D1 74 C1 D1
7150 78 82 47 79 83 4F F1 3D

3F 7158 20 E8 C9 3E 08 11 01 00
7160 CD 42 71 3E 04 11 00 01
7168 CD 42 71 3E 08 11 FF 00
7170 CD 42 71 3E 04 11 00 FF

40 7178 CD 42 71 C9 CD 6B 0D 21
7180 00 58 3E 18 16 20 1E 20
7188 CD 0D 6F 21 21 58 3E 0D
7190 16 0E 1E 18 CD DD 6F 21

41 7198 42 58 3E 08 16 0C 1E 04
71A0 CD DD 6F 21 31 58 3E 0D
71A8 16 0E 1E 18 CD DD 6F 21
71B0 52 58 3E 0B 16 0C 1E 00

42 71B8 CD DD 6F 3E 06 32 8F 5C
71C0 01 10 9F CD 71 72 01 90
71C8 9F CD 71 72 21 00 7C 54
71D0 5D 13 01 00 04 36 00 ED

43 71D8 B0 C3 F4 71 01 0C 0E CD
71E0 5B 71 01 0C 2E CD 5B 71
71E8 01 2C 0E CD 5B 71 01 2C
71F0 2E CD 5B 71 11 A7 76 21

44 71F8 C1 76 01 0A 00 ED B0 01
7200 1E 1E CD D9 0D 21 DF 76
7208 CD 7A 70 01 13 19 CD D9
7210 0D CD 8C 70 11 44 5A 21

45 7218 BF 76 3E 10 CD DF 6C 11
7220 55 5A 23 CB 2F CD DF 6C
7228 3E 3E 32 E8 58 32 F8 58
7230 CD 74 70 11 AA 76 01 FE

46 7238 FE CD 25 70 CD BD 73 11

7240 42 58 CD 49 73 21 42 40
7248 CD A5 72 11 AF 76 01 FE
7250 EF CD 25 70 CD BD 73 11

47 7258 52 58 CD 49 73 21 52 40
7260 CD A5 72 01 13 19 CD D9
7268 0D CD 8C 70 CA AC 74 18
7270 C2 16 06 C5 D5 C5 CD E5

48 7278 22 01 00 57 11 00 FF CD
7280 BA 24 C1 79 C6 10 4F D1
7288 15 20 E9 C1 16 06 D5 C5
7290 CD E5 22 01 5F 00 1E 01

49 7298 CD BA 24 C1 78 D6 10 47
72A0 D1 15 20 EA C9 1A 3D 20
72A8 04 CD FD 72 C9 3D 20 04
72B0 CD BF 72 C9 3D 20 04 CD

4A 72B8 FD 72 C9 CD BF 72 C9 06
72C0 0A 76 C5 54 5D 21 20 00
72C8 7B 07 07 07 E6 07 FE 07

72D0 20 03 21 20 07 19 E5 01

4B 72D8 10 00 ED B0 E1 C1 10 E2
72E0 EB 21 C0 FF 19 01 0C 00
72E8 7E FE FF 20 0C 12 13 0D
72F0 20 FB CD 20 74 CD 20 74

4C 72F8 C9 ED B0 18 F5 CD 20 74
7300 06 58 C5 E5 54 5D 23 01
7308 0B 00 ED B0 1A FE FF 28
7310 09 FE 00 20 04 3E 00 18

4D 7318 01 AF 12 E1 CD 9F 70 C1
7320 10 E0 C9 D5 21 00 7C 58
7328 16 00 CB 23 CB 23 CB 23
7330 CB 12 CB 23 CB 12 19 16

4E 7338 00 59 CB 2B CB 2B 19 CB
7340 23 CB 23 79 93 87 D1 3C
7348 C9 7E 23 D6 05 30 02 C6
7350 40 47 7E D6 06 30 02 C6

4F 7358 40 4F 23 23 E5 CD 23 73
7360 F5 CD 1F 74 F1 0E 0B 06
7368 0C E5 C5 47 4E 05 28 04
7370 CB 39 18 F9 47 79 E6 03

50 7378 FE 03 20 02 3E 07 87 87
7380 87 C6 06 12 13 78 3C 3C
7388 FE 09 20 11 23 7D E6 0F
7390 20 09 7D FE 00 20 01 25

51 7398 D6 10 6F 3E 01 C1 10 CA
73A0 E1 F5 3E 14 83 30 01 14
73A8 5F 7D C6 10 6F 30 08 24
73B0 7C FE 80 20 02 26 7C F1

52 73B8 0D 20 AC D1 C9 1A 47 D5
73C0 13 1A 4F 13 CD 23 73 C5
73C8 47 1A CD D1 74 13 1A C1
73D0 3D 20 0A 0C 79 FE 40 20

53 73D8 26 0E 00 18 22 3D 20 0A
73E0 05 78 FE FF 20 19 06 3F

73E8 18 15 3D 20 0A 0D 79 FE
73F0 FF 20 0C 0E 3F 18 08 04

54 73F8 78 FE 40 20 02 06 00 1B
7400 1B 79 12 18 78 12 CD 23
7408 73 57 47 7E 05 28 04 CB
7410 3F 18 F9 E6 03 20 12 42

55 7418 3E 03 CD D1 74 E1 C9 76
7420 01 BC 02 08 78 3C 20 FB
7428 C9 E1 22 8C 74 E5 7D FE
7430 A7 28 11 11 AF 76 21 52

56 7438 40 CD A5 72 21 F8 58 11
7440 52 58 18 0F 11 AA 76 21
7448 42 40 CD A5 72 21 E8 58
7450 11 42 58 ED 53 8F 74 06

57 7458 00 78 48 CD B1 74 78 ED
7460 44 CD B1 74 78 ED 44 4F
7468 78 CD B1 74 78 ED 44 CD
7470 B1 74 78 D9 3C 87 87 87

58 7478 87 47 CD FA 6F 78 C6 1E
7480 47 CD FA 6F 78 C6 1E 47
7488 CD FA 6F 21 AC 76 11 52
7490 58 CD 49 73 D9 04 78 FE

59 7498 06 20 BE E1 C1 7D FE A7
74A0 21 BF 76 28 01 23 35 28
74A8 03 C3 7C 71 21 58 27 D9
74B0 C9 5F 79 16 00 87 87 87

PRO-PRINTOUT

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74C0 38 01 15 19 78 D6 07 ED
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74D0 C9 4F 3E FC 05 28 07 CB

5B 74D8 21 37 CB 17 18 F6 A6 B1
74E0 77 C9 CD 68 0D 11 A7 76
74E8 21 CB 76 01 14 00 ED 80
74F0 3A BF 76 21 40 58 11 17

5C 74F8 1F CD 6F 76 3A C0 76 21

7500 58 58 11 0F 2F CD 6F 76
7508 DD 21 15 77 01 7C 5B CD
7510 C5 70 CD E6 6C CD 74 70

5D 7518 DD 2A B3 76 01 FE EF 11
7520 AF 76 CD 25 70 01 C0 76
7528 CD 20 76 DD 22 B3 76 DD
7530 2A B1 76 01 FE FE 11 AA

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7550 7E 80 47 FE 09 30 0B 06

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7560 18 08 FE 9F 38 04 06 9F
7568 18 EF 23 7E 81 4F FE D0
7570 38 42 20 23 3A AC 76 90



50 7578 3C FE 0A 30 44 CD 16 76
7580 7E ED 44 77 2B 7E CB 7F
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7590 6D E6 03 B2 77 18 2B FE

61 7598 F4 20 26 01 C0 76 21 58
75A0 58 11 0F 2F 18 48 A7 20
75A8 18 01 BF 76 21 40 58 11
75B0 17 1F 18 3A FE 2A 30 09

62 75B8 FE 28 20 EA 3A A7 76 18
75C0 B6 28 2B 71 2B 70 11 25
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75D0 20 04 DD 21 15 77 CD C5

63 75D8 70 DD 22 B5 76 41 CD FA
75E0 6F 01 13 17 CD D9 0D CD
75E8 8C 70 CB C3 18 75 C5 0A
75F0 06 40 F5 D5 E5 C5 76 CD

64 75F8 6F 76 CD 37 6D 47 CD FA
7600 6F 78 ED 44 47 CD FA 6F
7608 C1 E1 D1 F1 14 1C 10 E2
7610 E1 35 C2 E2 74 C9 E5 C5

65 7618 06 64 CD FA 6F C1 E1 C9
7620 62 68 0A 87 87 87 F5 C6
7628 81 32 41 76 F1 D6 2D ED
7630 44 32 50 76 CD 82 70 23

66 7638 7E 3D 3D 20 0B 04 04 70
7640 FE 89 20 12 05 05 18 0D
7648 3D 3D 20 18 05 05 78 FE
7650 25 20 03 04 04 70 11 25

67 7658 00 DD 19 DD 7E FB FE FF
7660 20 05 11 6C FF DD 19 2B
7668 2B 2B 70 CD C5 70 C9 47
7670 7A 32 91 76 7B 32 95 76

68 7678 3E 04 90 4F 87 87 87 87
7680 87 81 5F 16 00 E5 19 78
7688 87 F5 57 78 FE 03 38 04
7690 3E 5E 18 02 3E 56 CB 40

69 7698 20 02 C6 40 5F F1 C6 0C
76A0 CD DD 6F E1 10 D2 C9 39

76AB 18 00 01 F7 68 D8 00 01
76B0 97 CF 77 3F 78 15 77 45

6A 76B8 04 03 FC 03 1F 00 AD 00
76C0 02 00 00 02 01 FF 00 39
76C8 01 03 FF 5F 18 00 00 00
76D0 5F D8 00 00 00 AA 77 3F

6B 76D8 78 15 77 5B 7C 00 04 11
76E0 00 10 07 50 4C 41 59 45

76E8 52 20 20 31 11 04 20 20
76F0 20 20 20 20 20 11 00

6C 76F8 50 4C 41 59 45 20 20
7700 32 FF 0D 07 00 02 01 A1
7708 E8 00 04 03 AF 78 1F 79
7710 82 01 03 02 02 02 00 02

6D 7718 00 DC 00 3E 00 36 00 3E
7720 00 1D 80 20 00 20 00 00
7728 00 00 00 00 00 00 00 00
7730 00 00 00 00 00 82 01 03

6E 7738 02 02 00 00 61 00 1D 00
7740 3E 00 36 00 3E 00 5C 00
7748 43 00 00 00 00 00 00 00
7750 00 00 00 00 00 00 00 00

6F 7758 00 00 82 01 03 02 02 10
7760 00 08 00 1C 00 3E 80 77
7768 00 BE 00 1C 00 08 00 04
7770 00 00 00 00 00 00 00 00

70 7778 00 00 00 00 00 00 00 FF
7780 82 01 03 02 02 00 00 00
7788 18 00 3C 00 36 00 62 00
7790 00 00 63 00 F2 00 F2 00

71 7798 62 00 02 00 62 00 63 00
77A0 C8 00 BC 00 F0 82 01 03
77AB 02 02 00 38 00 7C 00 66
77B0 00 64 00 63 00 02 00 62

72 77B8 00 F2 00 F2 00 62 00 03

77C0 00 60 00 64 00 66 00 7C
77CB 00 38 82 01 03 02 02 00
77D0 F0 00 BC 00 C8 00 66 00

73 77D8 64 00 04 00 64 00 F4 00
77E0 F4 00 66 00 00 00 62 00
77E8 36 00 3C 00 18 00 00 82
77F0 01 03 02 02 00 38 00 7C

74 77F8 00 66 00 64 00 63 00 02
7800 00 62 00 F2 00 F2 00 62
7808 00 03 00 60 00 64 00 66
7810 00 7C 00 38 FF 82 01 03

75 7818 02 02 00 00 18 00 3C 00
7820 6C 00 46 00 00 00 C6 00
7828 4F 00 4F 00 46 00 40 00
7830 46 00 C6 00 13 00 3D 00

76 7838 0F 00 82 01 03 02 02 1C
7840 00 3E 00 66 00 26 00 C6
7848 00 40 00 46 00 4F 00 4F

7850 00 46 00 C0 00 06 00 26

77 7858 00 66 00 3E 00 1C 00 82
7860 01 03 02 02 0F 00 3D 00
7868 13 00 66 00 26 00 20 00
7870 26 00 2F 00 2F 00 66 00

78 7878 00 00 46 00 6C 00 3C 00
7880 18 00 00 00 82 01 03 02
7888 02 1C 00 3E 00 66 00 26
7890 00 C6 00 40 00 46 00 4F

79 7898 00 4F 00 46 00 C0 00 06
78A0 00 26 00 66 00 3E 00 1C
78AB 00 FF 82 01 03 02 02 00
78B0 00 00 00 39 9C 29 94 3D

7A 78B8 BC 29 94 29 94 39 9C 2B
78C0 D4 2B D4 39 9C 2B 14 2F
78CB F4 38 1C 00 00 00 00 82
78D0 01 03 02 02 00 00 00 00

7B 78D8 39 9C 29 94 2D B4 39 9C

78E0 29 94 29 94 3A 5C 2A 54
78EB 29 94 38 1C 2F F4 38 1C
78F0 00 00 00 00 82 01 03 02

7C 78F8 02 00 00 00 00 39 9C 39
7900 9C 2D B4 29 94 39 9C 29
7908 94 2A 54 3A 5C 29 94 28
7910 14 3F FC 38 1C 00 00 00

7D 7918 00 FF 82 01 03 02 02 00
7920 00 00 00 38 1C 2F F4 28
7928 14 39 9C 2B D4 2B D4 39
7930 9C 29 94 29 94 3D BC 29

7E 7938 94 39 9C 00 00 00 00 82

7940 01 03 02 02 00 00 00 00
7948 38 1C 2F F4 38 1C 29 94
7950 2A 54 3A 5C 29 94 29 94

7F 7958 39 9C 2D B4 29 94 39 9C
7960 00 00 00 00 82 01 03 02
7968 02 00 00 00 00 38 1C 3F

7970 FC 28 14 29 94 3A 5C 2A

80 7978 54 29 94 39 9C 29 94 2D
7980 B4 39 9C 39 9C 00 00 00
7988 00 FF 82 01 03 02 02 00
7990 00 00 00 3F FC 29 24 3F

81 7998 FC 10 10 13 00 17 FC 17
79A0 FC 13 00 10 10 3F FC 29
79AB 24 3F FC 00 00 00 00 82
79B0 01 03 02 02 00 00 00 00

82 79B8 3F FC 32 4C 3F FC 10 10
79C0 13 00 14 FC 14 FC 13 00
79CB 10 10 3F FC 32 4C 3F FC
79D0 00 00 00 00 82 01 03 02

83 79D8 02 00 00 00 00 3F FC 24
79E0 94 3F FC 10 10 13 00 14
79EB FC 14 FC 13 00 10 10 3F
79F0 FC 24 94 3F FC 00 00 00

84 79F8 00 FF 82 01 03 02 02 00
7A00 00 00 00 3F FC 24 94 3F
7A08 FC 08 08 00 C8 3F E8 3F
7A10 E8 00 C8 08 08 3F FC 24

85 7A18 94 3F FC 00 00 00 00 82
7A20 01 03 02 02 00 00 00 00
7A28 3F FC 32 4C 3F FC 08 08
7A30 00 C8 3F 28 3F 28 00 C8

86 7A38 08 08 3F FC 32 4C 3F FC
7A40 00 00 00 00 82 01 03 02
7A48 02 00 00 00 00 3F FC 29
7A50 24 3F FC 08 08 00 C8 3F

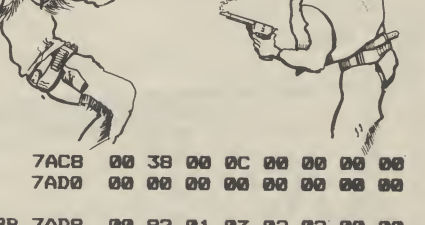
87 7A58 28 3F 28 00 C8 08 08 3F
7A60 FC 29 24 3F FC 00 00 00
7A68 00 FF 82 01 03 02 02 00
7A70 00 00 00 00 00 00 00 00

88 7A78 00 00 00 00 30 00 1C 00
7A80 1C 00 30 00 00 00 00 00
7A88 00 00 00 00 00 00 00 82
7A90 01 03 02 02 00 00 00 00

89 7A98 01 80 01 80 03 C0 02 40
7AA0 00 00 00 00 00 00 00 00

7AAB 00 00 00 00 00 00 00 00
7AB0 00 00 00 00 82 01 03 02

8A 7AB8 02 00 00 00 00 00 00
7AC0 00 00 00 00 00 0C 00 38



7ACB 00 38 00 0C 00 00 00 00
7AD0 00 00 00 00 00 00 00 00

8B 7ADB 00 82 01 03 02 02 00 00
7AE0 00 00 00 00 00 00 00 00
7AEB 00 00 00 00 00 00 00 00
7AF0 00 00 02 40 03 C0 01 80

8C 7AF8 01 80 00 00 00 00 82 01
7B00 03 02 02 FF FF FF FF C0
7B08 03 D1 0B CD B3 C9 93 C1
7B10 83 DE 73 CE 7B C1 83 C9

8D 7B18 93 CD B3 D1 0B C0 03 FF
7B20 FF FF FF 00 00 00 00 00
7B28 00 00 00 00 00 00 00 00
7B30 00 00 00 00 00 00 00 00

You've got it



Licked 

In Underwulde stand right next to one of the guardians so that the head of your knight overlaps with the guardian. Now wait and, eventually, the flying creatures will knock you past the guardian.
Darren Heaton,
Malvern, Worcs

WANT to win by battle in **The Lords of Midnight?** Move Luxor to Shimeril, to Brith, to Gard and then to Xajorith. Morkin, Corleth and Rorthron should go to Kumar, to Ithrom, to Dreams and then to the Tower of Doom. Luxor should then move north to Ushgarak.
Richard Perry,
Tunbridge Wells

EARN £50 in **Everyone's a Wally** by choosing to be Wilma and then taking the bunsen burner to the laboratory. This can be done by taking book one from the school, making sure that it is the lower of your two items and then exchanging it for the burner in the supermarket. Take it to the KEMCO laboratory and place it under the strange shaped bottle. Take the gas mask into the sewer and take the letter R in order to earn another £50.
Mark Thompson,
Southport, Merseyside

STILL stuck in **The Hobbit?** Move NE from Beorn's house, then go east twice to reach the Black River. Throw rope across river then pull. Tell Thorin to climb into the boat, then climb in yourself. On the other side climb out and go east. Tell Thorin to break web then pick you up and go NE. Tell him again to break the web, then go north, wear the ring, examine the door and then wait twice.
Alan Slater,
Great Yarmouth

WHEN playing the part of a toad in **Witch's Cauldron** do not drink the bottle of whiskey under the couch or you will turn into a newt and drown.
Trevor Guyton,
Halesworth, Suffolk

STUCK outside the temple in **Inca Curse?** Remove leaves from the branch in the clearing. Then pick up the branch and **BREAK LATCH**. When asked how to do this, reply **WITH BRANCH**.
D Greenwood,
Leigh-on-Sea, Essex

NOT enough money in **Ghostbusters?** Give your name as Jay Sean and 44244020 as your account number. You will then start the game with \$109,100.
S Jay,
Filton, Bristol

STUCK in **Hampstead?** Try looking under the bench on the Heath, examining the display in the Estate agents or opening the desk in the furniture department.
M Bridges,
Sittingbourne, Kent

SAVE memory on your **SZX-81** by entering **SIN** PI instead of zero, **-COS** PI instead of one and **INT PI** instead of three. Using **CODEs** also saves memory. **1 GOTO CODE** "A", for example, uses two bytes fewer than **1 GOTO 38**.
M Davies,
Llandeilo, Dyfed



Pen-friends

Stuart Pattullo, 33 Elmfield Road, Gosforth, Newcastle upon Tyne is 10 years old and owns a 48K Spectrum with joystick and interface. He enjoys writing programs and is looking for someone around his own age with whom he can swap tips and programs.

Steven Bryant, 8 Worthy Road, New Milton, Hampshire would like to contact other English Spectrum owners to exchange hints, tips and programs.

Simon Jones, 23 Granville Road, Cradley Heath, Warley, West Midlands designs his own games on the 48K Spectrum and would like to write to someone who is interested in programming.

John Tryggvi Jonsson, Skolavorfustig 26, Reykjavik 101, Iceland is 12 years old and enjoys using business programs on his 48K Spectrum. He would like a penfriend his own age, to whom he will write in English.

Chris Tate, 25 Millbrook Drive, West Leigh, Havant, Hampshire is 14 years old and is looking for a pen friend of about the same age who is interested in Spectrum adventure games.

Marcus Grundy, 51 Guillemot Close, South Beach, Blyth, Northumberland is looking for a ZX-8 owner in the north east of England with whom he can swap listing and sort out problems.

Christopher Megginson, 61 Rosedale Road Nunthorpe, Middlesbrough, Cleveland is 12 years old and owns a 48K Spectrum. He would like someone with whom he can swap hints and programs.



Stephen Kirby, 34 Coombe Road, Southminster, Essex is 13 years old and owns Spectrum. His favourite games are Ghostbusters, Decathlon and Steve Davis Snooker. He would like to swap games and ideas.

Stephen Davis, 95 Cistowel Road, Kings Heath, Birmingham is looking for a penfriend who is around the age of 12 and who would be able to supply POKES for games.

Steven Collett, 34 Oldany Way, Glendale Estate, Nuneaton, Warks. is 13 years old and has owned a Spectrum for six months. He would like to write to anyone who is just learning machine code or who is also interested in adventure games.

Andrew Cooper, 185 Wakeley Road, Rainham, Kent is looking for another 16K ZX-81 owner around the age of 13.

Duflos Pascal, 58 AV Jean Jaures, 92190 Meudon, France is 22 years old and would like to write to a 48K Spectrum owner with whom he can swap ideas as well as tips and programs.

Mark Edser, 60 Bradmore Way, Old Coulsdon, Surrey would like a penfriend with a 48K Spectrum.

DE

HOW IT WORKS

- 10 Clears screen. DIMensions a\$ and w\$ to store a random selection of up to 30 letters each. (These are now called string arrays. In other words, they are undefined as to contents at this stage, but at least the computer knows that a string is to be set up). The POKE does a CAPS LOCK, while the GOSUB prints instructions.
- 20 Sets up v\$ and c\$
- 30-40 Set up co and vo
- 45-60 Scan through a\$ and w\$ to select randomly vo vowels and co consonants. n is a less important variable, known as a loop counter, counting each character as another one until the correct number has been done.
- 70-80 Read word entered by player and set le to length (number of characters) in string as entered.
- 90-140 This is the umpire part of the program. We have what are called "nested" loops here, meaning one inside the other. In fact, there are two inside the other. The outer loop works through each let-

ter of the word as entered, using loop counter n again. The two separate inner loops, both using counter m because they are separate, look at the computer's selection of consonants and vowels respectively, to make sure that letters chosen are amongst those given. When a match is found the corresponding letter is a\$ or w\$ is nulled or blanked out, and the search moves on to the next n (or letter of the player's choice). No match in the consonants loop passes control to the vowels loop. No match in the vowels loop causes an exit to the CHEAT routine at 1010.

X

- 150 Exits from the outer loop above which means that all letters are valid (not necessarily the word!) so program gives "o.k by me" message.
- 160 Calculates and prints score. Depends on length of word entered and number of consonants and vowels asked for.
- 170-190 Prompt for "another game?" and re-start if "y". Note that NEW is used if "n" which is bet-

ter than STOP if player is sure he does not want to continue.

- 900-950 Print instructions.
- 1000- Print "Cheat" message".
- 1020 Note how OUT is used to obtain a flashing BORDER.

Dexam was written for the Spectrum or Spectrum Plus by Claudiu Schiller of Haifa, Israel.

VARIABLES

A variable is a name given to one or more locations in memory. In this game, using letters and words, many of the variables are known as string variables, because they usually contain a string of letters. On the Spectrum, a string variable name must be a single letter followed by \$. The main variables are:

- v\$ is a 5 character string containing the vowels.
- C\$ is a 21 character string containing the consonants.
- vo is number of vowels asked for.
- co is number of consonants asked for.
- w\$ is a random selection of vowels into a string of vo length.
- a\$ is a random selection of consonants into a string of co length.
- n\$ is a string to contain word entered by player.
- le is length of n\$ (found after word has been entered, so string length does not have to be pre-set).

AM

WHAT IT DOES

This is really a game between human players, with the computer acting as umpire. It starts by prompting the current player to enter the number of vowels and consonants from which he wishes to make a word. A random selection is then made from the correct number of each and these are displayed on the screen. The player must now make a word from the computer's selection of letters. Obviously, a program this simple cannot have any kind of vocabulary of its own, so all it now does is make sure that the letters used are those it has given to the player. It is up to other players to say whether the word can be allowed or not.

```

10 CLS : BEEP .1,-5: DIM q$(30)
: DIM w$(30): POKE 23658,8: GO
SUB 900
20 LET v$="AEIOU": LET c$="QWR
TYPSEDFGHJKLZXCVBNM"
30 INPUT "HOW MANY CONSONANTS?
";co: IF co>30 THEN GO TO 30

40 INPUT "HOW MANY VOWELS? ";v
o: IF vo>30 THEN GO TO 40
45 PRINT AT 2,1;"CONSONANTS":
PRINT AT 3,2;
50 FOR n=1 TO co: LET q$(n)=c$
( INT ( RND *21)+1): PRINT q$(n)
: BEEP .05,5: NEXT n
55 PRINT AT 5,1;"VOWELS": PRI
NT AT 6,2;
60 FOR n=1 TO vo: LET w$(n)=v$
( INT ( RND *5)+1): PRINT w$(n);
: BEEP .05,10: NEXT n
70 INPUT "GIVE ME A WORD:"; LI
NE N$
80 LET le= LEN N$
90 FOR n=1 TO le: FOR m=1 TO c
o
100 IF N$(n)=q$(m) THEN LET q$
(m)="": GO TO 140
110 NEXT m: FOR m=1 TO vo
120 IF N$(n)=w$(m) THEN LET w$
(m)="": GO TO 140
130 NEXT m: GO TO 1000
140 NEXT n
150 BEEP .7,0: PRINT AT 10,2;"
YOUR WORD IS O.K. FOR ME"
160 PRINT AT 14,2;"YOU HAVE ";
INT (le/(co+vo)*100);" POINTS"
170 INPUT "WANT TO TRY AGAIN(Y/
N)? "; LINE y$
180 IF y$="N" THEN BEEP .7,30:
PRINT AT 20,3;"COME ON,YOU CAN

```

```

DO BETTER!!!", " ARE YOU SURE
YOU WANNA QUIT? ": INPUT LINE m
$: IF m$="Y" THEN NEW
190 CLS : GO TO 20
900 PRINT AT 0,13;"DEXAM"
910 PRINT AT 3,1;"IN THIS GAME
,YOU'RE SUPPOSED TO DEMONSTRAT
E YOUR ENGLISH KNOWLEDGE BY
COMPOSING WORDS OUT OF RANDOM
LETTERS."
920 PRINT " THIS IS A GAME FOR
TWO AS THE COMPUTER CAN'T SEE
IF YOUR WORD HAS REALLY ANY MEAN
ING.YOUR CONCURENT WILL TAKE
CARE OF THAT"
930 PRINT " THE POINTS YOU'LL
GET ARE ACCORDING TO THE LE
NGTH OF THE WORD AND THE NO. OF
LETTERS YOU ASKED FOR."
940 PRINT AT 20,10;"GOOD LUCK!
"
950 PAUSE 0: CLS : GO TO 20
1010 BEEP .5,-10: PRINT AT 10,2
; FLASH 1;"BAD BOY!!!" YOU
CAN'T CHEAT A COMPUTER!"
1020 FOR N=1 TO 200: OUT 254,16:
OUT 254,63: OUT 254,3: NEXT N:
CLS : GO TO 20
9999 SAVE "DEXAM" LINE 1

```

BEGINNER

BAT 'N' BALL

Move your bat with keys 5 and 8 in order to hit the bouncing ball. As the game progresses, your bat will become smaller and smaller. Keep the ball bouncing for as long as possible.

Bat 'n' Ball was written for the 1K ZX-81 by P Raistrick of Shipley, West Yorkshire.



```

10 LET UV=SGN PI
20 LET HH=UV
30 LET S=NOT PI
40 LET V=HH
50 LET H=INT (RND*CODE "?")+CO
DE " "
60 LET A=CODE " "
70 FOR F=CODE " " TO CODE "="
80 PRINT AT NOT PI,F;" "
90 NEXT F
100 FOR F=SGN PI TO CODE " "
110 PRINT AT F,CODE "+";" ";AT
F,SGN PI;" "
120 NEXT F
130 LET A=A+(INKEY$="8")-(INKEY
$="5")

```

```

140 PRINT AT VAL "11",A;" "
150 LET V=V+UV
160 LET H=H+HH
170 PRINT AT V,H;"O"
180 IF H=A+CODE " " AND V=CODE
" " THEN LET UV=-UV
190 IF H=A+CODE " " AND V=CODE
" " THEN LET S=S+ABS UV
200 IF H(>)A+CODE " " AND V=CODE
" " THEN PRINT "SCORE=";S;X
210 IF H=CODE " " OR H=CODE " "
THEN LET HH=-HH
220 IF V=SGN PI THEN LET UV=-UV
230 PRINT AT V,H;" "
240 GOTO VAL "130"

```


PEST SPRAY

It is summertime, and your garden looks beautiful. Flowers are blooming, vegetables are sprouting, fruit is ripening. It is all a great temptation to the garden pests which have begun flooding into your garden. Flatten as many of them as possible with your roller to avoid being completely overrun.

Pest Spray was written for the Spectrum or Spectrum Plus by Terry Walker of Ipswich, Suffolk.



```

1 CLS : PRINT AT 5,0;"LEFT
5""RIGHT 8": PRINT AT 10,7;"A
NY, KEY TO START": PAUSE 0
2 BORDER 4
3 CLS
4 RANDOMIZE 0
10 POKE 23658,8
20 LET M=0
21 LET MM=0
30 LET D=1
35 LET S=0
40 LET X=15
50 DIM B(30)
60 DIM A(30)
100 FOR N=12-D TO D+19
101 IF A(N)=0 THEN NEXT N
110 PRINT AT B(N),N;"(isp)"
111 PRINT AT B(N)-1,N;" "

```

```

120 LET B(N)=B(N)+1
130 IF B(N)=13 THEN LET M=M+1

131 IF B(N)=21 THEN LET B(N)=0
: LET A(N)=0: PRINT AT 20,N;" "

140 IF INKEY$="5" AND X>1 THE
N LET X=X-1
150 IF INKEY$="8" AND X<30 TH
EN LET X=X+1
160 PRINT AT 11,X-1;" + "
170 IF B(N)=12 AND N=X THEN LE
T A(N)=0: LET B(N)=0: LET MM=MM+
1: LET S=S+1
200 IF S=7 THEN GO TO 300
210 IF M=10 THEN GO TO 350
220 PRINT AT 21,0;"SCORE ";MM;
AT 21,15;"MISSES ";M

```

```

225 NEXT N
230 LET A=INT (RND *2)
231 IF A<1 THEN GO SUB 250
240 GO TO 100
250 LET A=INT (RND *30)+1
260 LET A(A)=1
270 RETURN
300 CLS
301 PRINT "MISSION COMPLETED"

310 BEEP 1,20
320 LET D=D+1
330 LET S=0
335 CLS
340 GO TO 40
350 CLS
351 PRINT "OVERRUN BY BUGS"
360 STOP

```

BEGINNER

RISK

The screen is divided by walls in which are set a number of gates. Touching the walls means instant death, but you are determined to cross as many screens as possible. The gates only open for fractions of a second, so you must take a Risk every time you move.

Risk was written for the 16K ZX-81 by Anthony Hill of Bradford, West Yorkshire.



```

1 GOSUB 9000
5 LET S=200
6 LET E=10
10 LET A=15
20 LET B=INT (RND*20)+2
30 PRINT AT 0,10;"**RISK**";AT
1,10;"*****"
35 LET C=13
37 PRINT AT 16,0;" "
38 PRINT AT 17,0;"SCORE ";S;"
DIFFICULTY ";E
40 PRINT AT 5,0;" "
50 PRINT AT 13,0;" "
60 PRINT AT 9,0;" "
70 LET AA=INT (RND*20)
80 PRINT AT C,AA;"
90 PRINT AT A,B;" "
91 FOR N=1 TO E
92 NEXT N
95 LET S=S-1
100 IF INKEY$="" THEN GOTO 40

```

```

110 PRINT AT A,B;" "
120 LET A=A-2
130 PRINT AT A,B;
132 IF PEEK (PEEK 16398+256*PEE
K 16399)=CODE ("■") THEN GOTO 160
138 PRINT "■"
140 PRINT AT A,B;" ";AT A,B;"■"
147 LET C=C-4
148 LET A=A-2
150 IF C<5 THEN GOTO 165
155 GOTO 40
160 GOTO 200
165 CLS
166 PRINT AT A+2,B;" ";AT A,B;"
"
168 PRINT AT 16,0;"**RISK**"
" LETS SEE HOW GOOD";AT 18,0;"YO
U THIS TIME."
170 PAUSE 200
180 LET S=S+5
185 LET E=E-1
186 IF E<1 THEN LET E=1
187 CLS
190 GOTO 10
200 PRINT AT A+1,B;"■"

```

```

205 PAUSE 200
207 CLS
210 PRINT AT 10,0;"HARD LINES,Y
OU WERNT GOOD ENOUGH"
220 PRINT AT 12,0;"SCORE ";S
230 PRINT AT 14,0;"PRESS ANY KE
Y TO PLAY AGAIN."
240 PAUSE 4E4
245 CLS
250 GOTO 5
9000 PRINT AT 0,10;"**RISK**"
9010 PRINT AT 1,10;"*****"
9020 PRINT AT 3,0;"PRESS ANY KEY
TO JUMP THROUGH ";AT 5,0;"THE G
ATES IN THE WALLS TO GET ";AT 7,0
";TO THE NEXT SHEET."
9030 PRINT AT 9,0;"( WHICH WILL
BE FASTER )"
9040 PRINT AT 14,5;"PRESS ANY KE
Y TO PLAY "
9050 IF INKEY$="" THEN GOTO 9050
9060 CLS
9070 RETURN
9098 SAVE "RS"
9099 GOTO 1

```


SURVIVAL

Flying on a top secret mission you find you are being pursued by a drone. Fortunately the drone is confused by the heat of stars, and will bounce away when it hits one.

Survival was written for the Spectrum or Spectrum Plus by Andrew Galbraith of Oban, Argyll.

```

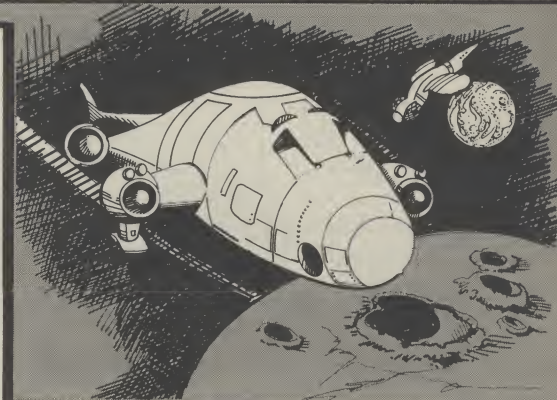
5 BORDER 1: PAPER 0: INK 7: C
LS
8 GO SUB 60
10 PRINT AT 5,7: FLASH 1: BRI
GHT 1:"S U R V I V A L": PRINT
AT 7,0:" IN THIS GAME YOUR SPAC
ECRAFT(" INK 5;"A": INK 7;) IS
BEING PURSUED BY AN ALIEN SPA
CECRAFT(B) AND WHEN IT RE
ACHES YOU, YOU ARE DEAD. HO
WEVER, WHEN THE ALIEN SP
ACECRAFT FLIES INTO ONE OF TH
E STARS (" BRIGHT 1: INK 6;"*";
BRIGHT 0: INK 7;" ) IT REBOUNDS
IN ANOTHER DIRECTION."
15 PRINT AT 16,0:"IF YOU MANA
GE TO SURVIVE LONG ENOUGH A RE
SCUE SHIP COMES TO RESCUE YOU.
""USE CURSOR KEYS (5,6,7 AND 8
) TO MOVE YOUR SPACESHIP."
18 PRINT #1:"PRESS ANY KEY": P
AUSE 0: CLS

```

```

20 LET S=0: LET X=21: LET Y=31
30 LET A=0: LET D=0: LET Y=0
40 LET OX=X: LET OY=Y: LET OA=
A: LET OD=D
50 FOR N=1 TO 35: PRINT AT R
ND *21, RND *31: BRIGHT 1: INK 6
;"*": NEXT N
55 GO TO 100
60 FOR N=32300 TO 32309: READ
Z: POKE N,Z: NEXT N: DATA 62,255
,211,254,61,254,0,32,248,201
70 FOR N=USR "A" TO USR "C"+
7: READ Z: POKE N,Z: NEXT N: RET
URN : DATA 24,24,60,255,255,60,2
4,24
80 DATA 0,0,60,255,255,255,60,
0
90 DATA 192,96,60,255,255,60,9
6,192
100 PRINT AT OD,OA;" ": AT D,A
;"B"
110 PRINT AT OX,OY;" ": AT X,Y
;"A"
115 LET OX=X: LET OY=Y: LET OA=
A: LET OD=D
120 LET X=X+( INKEY$ ="6" AND X
<21)-( INKEY$ ="7" AND X>0)
130 LET Y=Y+( INKEY$ ="8" AND Y
<31)-( INKEY$ ="5" AND Y>0)
140 LET D=D+(X>D)-(X<D)
150 LET A=A+(A<Y)-(A>Y)
190 IF SCREEN$ (D,A)="#" THEN
BEEP .1,50: BEEP .1,30: LET A=
-A: LET D=-D
200 IF X=D AND Y=A THEN GO TO
250
205 IF S=500 THEN GO TO 300
210 LET S=S+1: BEEP .01,(D+A+X+
Y)/5: BEEP .007,20: GO TO 100
250 PRINT #1: AT 0,0:"YOU ARE D

```



```

EAD! YOU SCORED ";S'"PRESS ""P""
TO PLAY AGAIN"
260 IF INKEY$ ="P" OR INKEY$
="p" THEN FOR A=60 TO 0 STEP -2
: BEEP .01,A: BEEP .01,A-5: NEXT
A: RUN
270 LET T=USR 32300: GO TO 260
300 FOR N=0 TO 31: PRINT AT X,
N;"C": PAUSE 5
302 IF N=Y THEN BEEP .1,40
304 PRINT AT X,N;" ": NEXT N
305 PRINT #1: AT 0,0: BRIGHT 1:
"WELCOME HOME! YOU WON! SCORE=";
S'"PRESS ""P"" TO PLAY AGAIN"
307 FOR N=0 TO 10: READ A: BEEP
.2,A*10: NEXT N: DATA 0,1,2,1,0
,2,0,2,1,4,3
310 IF INKEY$ ="p" OR INKEY$
="P" THEN FOR A=0 TO 60 STEP 2:
BEEP .01,A: BEEP .01,A+5: NEXT
A: RUN
320 GO TO 310

```

SNIPER 81

Life is tough on the streets in the Wild West. A Sniper is out to get you. He will appear on screen in one of nine positions. Select one of your stun guns, one to nine, in order to hit him before he can kill you.

Sniper 81 was written for the 16K ZX-81 by Jane Haslam of Wirral, Merseyside.



```

10 PRINT "
*** SNIPER ***
HIT THE LITTLE MAN B
Y PRESSING KEYS 1 TO 9. IF YO
URE NOT QUICK ENOUGH, HE MAY
SHOOT YOU"
20 PAUSE 500
30 LET L=3
40 LET S=0
50 LET A$=""
60 LET B$=""
70 LET C$=""
80 CLS
90 PRINT AT 0,5;"SNIPER ";L,"B

```

```

";S
100 LET A=INT (RND*10+.5)
110 IF A>9 OR A<1 THEN GOTO 100
120 PRINT AT 3,A*3-2;A$
130 FOR I=1 TO 15
135 LET Z$=INKEY$
140 IF CODE Z$<CODE "0" OR CODE
Z$<CODE "9" THEN GOTO 160
150 IF A=VAL Z$ THEN GOTO 230
155 IF A<VAL Z$ THEN GOTO 170
160 NEXT I
170 IF RND<=.5 THEN GOTO 250
180 PRINT AT 3,A*3-2;C$;AT 8,A*
3-2;"B"
190 LET L=L-1
200 PAUSE 20
210 IF L<1 THEN GOTO 270
220 GOTO 250
230 PRINT AT 3,A*3-2;B$

```

```

240 LET S=S+1
250 PRINT AT 3,0;"

```

```

260 GOTO 90
270 PRINT AT 10,5;"YOU'RE DEAD"
280 PRINT AT 0,5;"L";S
290 "S";AT 12,5;"YOU SCORED ";S;
" HITS"
290 PRINT "PRESS A KEY TO PLAY
AGAIN"
300 PAUSE 1000
310 CLS
320 RUN
330 SAVE "SNIPER"
340 RUN

```


LISTING

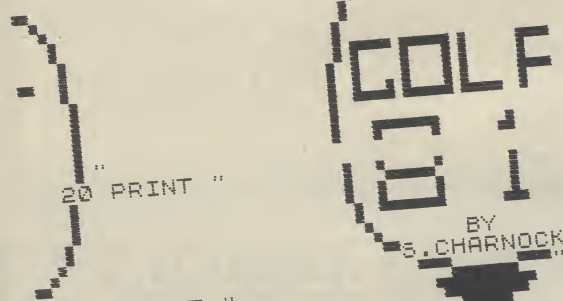
CHAMPIONSHIP GOLF

Your aim in Championship Golf is to hole in one. Input the height of the hole on the screen (the height will be between 9 and 21) and the length of the hole (the length will be between 10 and 31). How quickly can you select the correct coordinates?

Written for the 16K ZX-81 by Stephen Charnock of Ormskirk, Lancashire.

GOLF

```
1 CLS
5 REM TITLE
6 REM XXXXXXXXXXXXXXXXXXXXXXXX
10 PRINT "
```



```
30 PRINT "
```

```
40 PRINT AT 21,0;" PRESS AN
Y KEY TO PLAY"
50 IF INKEY#="" THEN GOTO 50
60 CLS
61 REM VARIABLES
65 REM
70 LET S=0
80 LET H=1
91 LET R=INT (RND*10)+21
92 LET R1=INT (RND*12)+9
95 REM SCREEN
99 REM
100 PRINT AT 0,0;"HOLE:";H;" ST
ROKES:";S
110 FOR F=1 TO 8
120 PRINT AT F,0;"
```

```
130 NEXT F
140 PRINT AT 15,5;"";AT 16,4;"
";AT 17,4;"";AT 18,4;"";
";AT 19,4;"";AT 20,4;"";
";AT 21,4;"
150 PRINT AT R1,R;"0"
151 PRINT AT R1-S,R;"T"
152 FOR F=R1-5 TO R1
153 PRINT AT F,R+1;"1"
154 NEXT F
160 REM GOLF INPUT
170 REM
180 PRINT AT 0,18;" HEIGHT 21-9
```

```
181 INPUT HI
182 IF HI>21 OR HI<9 THEN GOTO
180
190 PRINT AT 0,18;"LENGTH 10-31
```

```
191 INPUT LE
192 IF LE>31 OR LE<10 THEN GOTO
190
195 GOTO 1000
200 REM GOLFER
1000 REM
1010 PRINT AT 15,5;"";AT 16,4;"
";AT 17,4;"";AT 18,2;"";
";AT 19,4;"";AT 20,4;"";
T 21,4;"
```

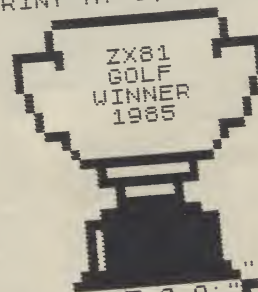
```
1020 PRINT AT 15,5;"";AT 16,4;"
";AT 17,4;"";AT 18,2;"";
";AT 19,4;"";AT 20,4;"";
";AT 21,4;"
1030 REM BALL
1040 REM
1041 LET Y=10
1050 FOR X=20 TO 1 STEP -1
1051 LET Y=Y+1
1052 IF Y=LE THEN LET Y=Y-1
1053 IF X=1 THEN GOTO 1110
1055 PRINT AT X,Y;"";AT X,Y;"
1060 IF X<9 THEN PRINT AT X,Y;"
```

```
1100 NEXT X
1110 FOR X=X TO HI-1
1120 PRINT AT X,Y;"";AT X,Y;"
1121 IF X<9 THEN PRINT AT X,Y;"
```

```
1300 NEXT X
1305 LET S=S+1
1310 IF X=R1 AND Y=R THEN GOTO 2
000
1320 PRINT AT X,Y;"X"
1330 PRINT AT 1,0;"*****BAD L
101 OLD CHAP*****"
1340 PAUSE 4E4
1360 GOTO 100
1370 REM POTTED
2000 REM
2010 PRINT AT R1,R;"";AT 14
2020 PRINT AT 13,7;"";
";AT 15,6;"
";AT 16,5;"
2030 PRINT AT 1,0;"*****WELL
DONE OLD CHAP*****"
2040 LET H=H+1
2050 IF H=10 THEN GOTO 3000
2060 PAUSE 4E4
```



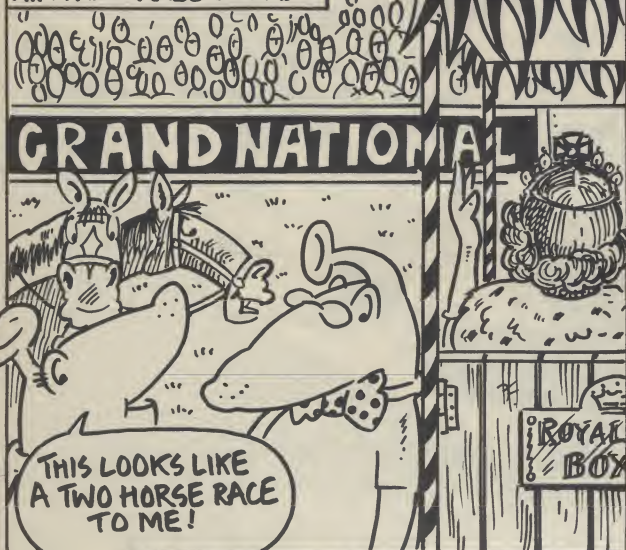
```
2065 PRINT AT 13,7;"";AT
14,6;"";AT 15,6;"
2066 FOR F=R1-5 TO R1
2067 PRINT AT F,R;"
2068 NEXT F
2070 GOTO 90
2080 REM GAME WON
3000 REM
3010 CLS
3020 PRINT AT 0,0;"GOOD SHOW.YOU
WON THE ZX81 GOLF TROPHY.FINIS
HIG ALL 9 HOLES
STROKES"
3025 REM XXXXXXXXXXXXXXXXXXXXXXXX
3030 PRINT AT 5,0;
```



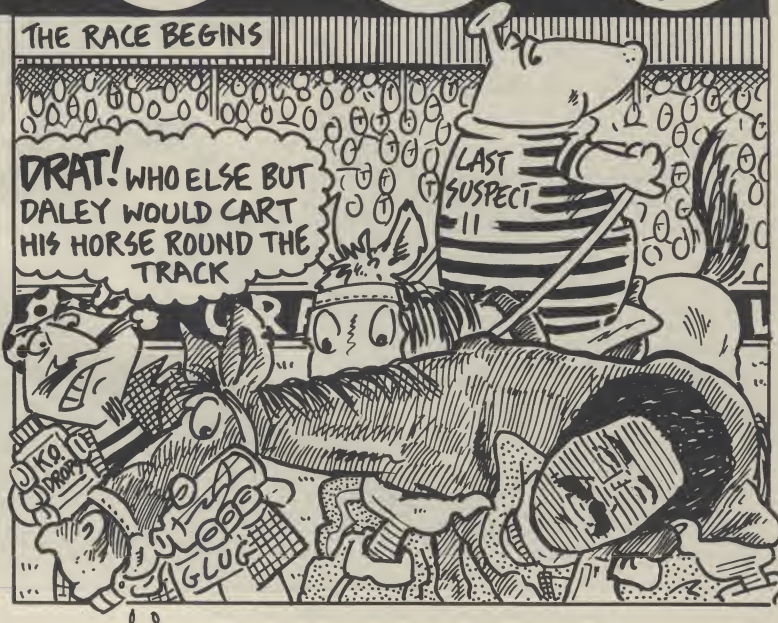
```
3035 PRINT AT 8,9;"";AT 8,20;"
";AT 9,9;"";AT 9,19;"
3040 GOTO 40
3050 REM AUTO RUN
9996 REM
9997 REM "GOLF"
9998 SAVE "GOLF"
9999 RUN
```


SPROGS

AINTREE RACE COURSE



THE RACE BEGINS



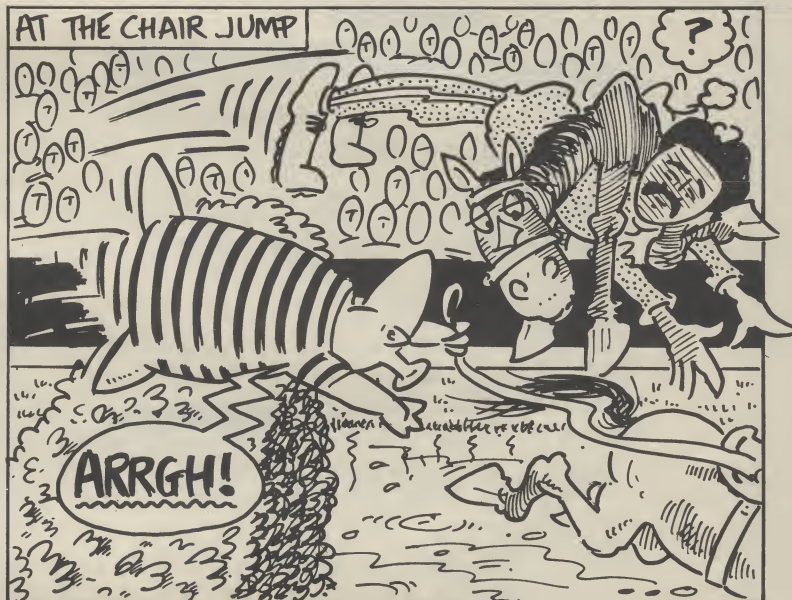
DALEY SETS THE PACE



MEANWHILE...



AT THE CHAIR JUMP



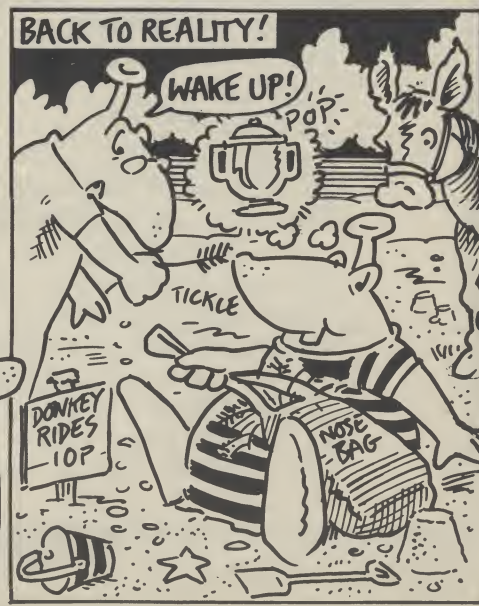
SPROG JUST MAKES THE WINNING POST



IN THE WINNERS ENCLOSURE



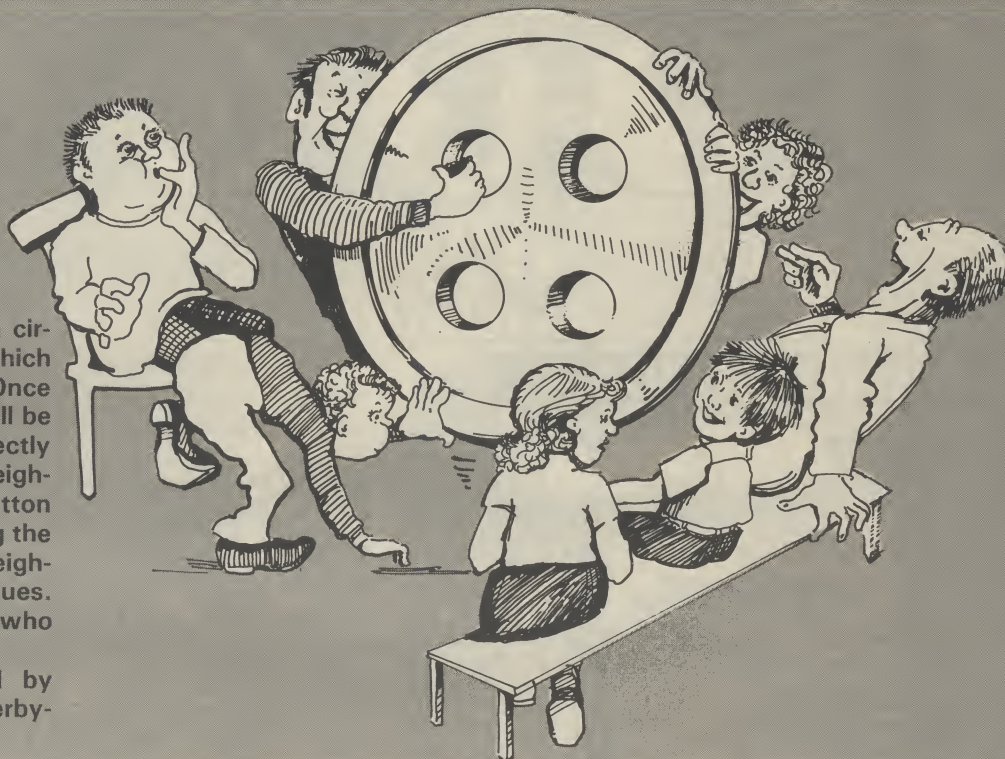
BACK TO REALITY!



BUTTON

Eight people are sitting in a circle, and you must guess which of them is holding the Button. Once you have made a guess you will be told whether you guessed correctly or not, whether one of the neighbouring characters holds the button and whether the person holding the button has passed it to her neighbour since you made your guess. How quickly can you guess who holds the button?

Written for the 16K ZX-81 by Robert Street, of Belper, Derbyshire.



```

1  SAVE "THE BUTTON"
2  CLS
5  REM INITIALISE
10 PRINT "          THE BUTTO
N
20 PRINT "      A"
30 PRINT
40 PRINT "      H      B"
50 PRINT
60 PRINT "      G      C"
70 PRINT
80 PRINT "      F      D"
90 PRINT
100 PRINT "      E"
110 LET A$="468ACA86"
120 LET B$="69B96313"
130 LET POS=1
140 LET GOS=0
150 LET R$=""
160 PRINT AT 4,13;"
";AT 12,13;"
170 FOR F=5 TO 11
180 PRINT AT F,13;"
190 NEXT F
200 PRINT AT 15,0;"N">>MOVE
LEFT" ">>MOVE RIGHT" ">>
ENTER CHOICE"
210 LET RES=0
220 LET PIP=INT (RND*8)+1
245 REM MAIN GAME
250 IF GOS>0 AND LEN R$<=17 THE
N PRINT AT 5,14;R$
260 IF GOS>0 AND LEN R$>17 THEN
PRINT AT 5,14;R$( TO 17);AT 6,1
4;R$(18 TO )
270 PRINT AT 11,14;"YOUR GUESS?
";CHR$(POS+37)
280 LET U$=INKEY$
290 PRINT AT CODE A$(POS)-28,CO
DE B$(POS)-28;CHR$(POS+165);AT
11,14;"YOUR GUESS?";CHR$(POS+3
7);AT CODE A$(POS)-28,CODE B$(PO
S)-28;CHR$(POS+37)
310 IF U$<>"N" AND U$<>"M" AND
U$<>". THEN GOTO 280
320 LET POS=POS+(U$="M")-(U$="N
")
330 IF POS=0 THEN LET POS=8
340 IF POS=9 THEN LET POS=1
350 IF U$<>". THEN GOTO 280
360 PRINT AT 11,14;"
";AT 5,14;"
";AT 6,14;"
370 LET GOS=GOS+1

```

```

380 LET RES=0
390 LET CCK=0
400 IF POS=PIP THEN LET CCK=1
410 IF POS=PIP+1 OR POS=PIP-1 O
R (POS=8 AND PIP=1) OR (POS=1 AN
D PIP=8) THEN LET CCK=2
420 IF CCK=0 THEN PRINT AT 8,15
;"I DON'T HAVE IT."
430 IF CCK=1 THEN PRINT AT 8,17
;"CORRECT"
440 IF CCK=2 THEN PRINT AT 8,14
;"MY NEIGHBOUR HAS";AT 9,21;"IT."
450 IF CCK=1 THEN GOTO 600
460 LET RES=1
470 IF CCK=0 THEN LET RES=INT (
RND*2)
480 IF RES=0 THEN LET R$=" WHOE
VER HAS IT      KEEPS IT."
490 IF RES=1 THEN LET R$=" WHOE
VER HAS IT      PASSES IT."
500 LET X=INT (RND*2)
510 IF RES=1 AND X=0 THEN LET P
IP=PIP+1
520 IF RES=1 AND X=1 THEN LET P
IP=PIP-1
530 IF PIP=9 THEN LET PIP=1
540 IF PIP=0 THEN LET PIP=8
550 FOR X=1 TO 30
560 NEXT X
570 PRINT AT 8,14;"
";AT 9,14;"
580 GOTO 250
595 REM END GAME
600 FOR X=5 TO 11
610 PRINT AT X,14;"
620 NEXT X
630 PRINT AT 5,14;"GOES>";GOS
640 IF GOS<5 THEN LET R$=" VE
RY LUCKY."
650 IF GOS>4 AND GOS<12 THEN LE
T R$="      VERY GOOD"
660 IF GOS>11 AND GOS<20 THEN L
ET R$="      GOOD"
670 IF GOS>19 AND GOS<30 THEN L
ET R$="      NOT BAD"
680 IF GOS>29 THEN LET R$=" NO
T VERY GOOD"
690 PRINT AT 7,14;R$
700 PRINT AT 11,14;"ANOTHER GO?
710 IF INKEY$="Y" THEN RUN 2
720 IF INKEY$="L" THEN LOAD ""
730 IF INKEY$="S" THEN RUN
740 GOTO 700

```


Give your power pills more punch

Tony Rickwood demonstrates how much faster a game will work when Basic is replaced by machine code in key areas.

IF YOU have followed this series on machine code so far, you will by now, be raring to go with some practical games applications. Most commercial games are 100% machine coded for speed and animation quality, but it would be much too ambitious for us to present and explain what might be an enormous assembler listing in these few pages.

A much more practical approach is to see how a traditional maze type game, written in Basic, can be made much more fun to play by replacing some of the routine basic programming with machine code. Admittedly, maze games are a bit old hat now, but the game I will be presenting here has been specially written to give readers a rare opportunity to



see, at a glance, just how much better than Basic m/c really is.

At the touch of a key, you will be able to get your Spectrum to throw out a large chunk of Basic and call in a m/c routine instead. See for yourself how much more energy a diet of power pills and m/c will give Pacman and the four ghosts.

First, enter and run Program one which POKES 199 bytes of machine code into memory, starting at location 64000 (the game is designed for the 48K Spectrum). As a wrong number may cause the computer to crash, a check is made to make sure data is entered correctly. When you have got the "data entry o.k." message, SAVE program 1 to tape.

Now enter Program two. When entering a long Basic program, I find that the best plan is to start by entering and testing the part which sets up the User Defined Graphics. This is contained in lines 6000 onwards. Now RUN this part (do not worry about the "RETURN WITHOUT GOSUB" message) and go into graphics mode (Caps/9). Pressing any letter from a to u will demonstrate that all 21 UDGs have been used. Graphic letters a to n are for the maze walls, o to u are for Pacman (moving in four directions), ghosts, power pills, and dots.

The next part to enter and check is the subroutine which sets up the screen (in this case, by printing the maze). Lines 5000-5040 do this. With the graphics already set up in memory, you will see the maze emerge as you enter the two PRINT statements, which will help you to correct any mistakes as they are made. Now type RUN 6000 to make sure that the maze is printed complete with dots and power pills. You should have everything in white on a black background.



As the way the program works depends on different objects having different colours, these are best put into the PRINT statements using colour control characters. The colours you MUST

```

10 REM Machine Code Setup for
   Ghostchase @ Tony Rickwood
20 CLEAR 63999: LET s=0: FOR i
   =64000 TO 64198: READ n: POKE i,
   n: LET s=s+n: NEXT i
30 READ sum: IF s <> sum THEN
   PRINT, "error in data entry" "ch
   eck line 40": STOP
40 DATA 97,107,98,108,99,109,1
   00,110,101,111,102,112,103,113,1
   04,114,120,121,97,98,99,100,101,
   102,103,104,0,221,33,0,250,6,8,2
   05,153,250,126,87,221,35,205,153
   ,250,114,221,35,16,241,205,153,2
   50,70,221,35,205,153,250,78,221,
   35,221,126,0,254,0,200,205,153,2
   50,94,221,35,205,153,250,86,221,
   43,120,147,40,28,56,11,28,205,16
   9,250,254
50 DATA 6,32,14,29,24,15,29,20
   5,169,250,254,6,32,3,28,24,4,205
   ,153,250,115,221,35,121,146,40,2
   8,56,11,20,205,169,250,254,6,32,
   14,21,24,15,21,205,169,250,254,6
   ,32,3,20,24,4,205,153,250,114,22
   1,35,205,169,250,54,6,24,163,197
   ,42,75,92,1,200,0,221,126,0,237,
   177,35,35,193,201,213,197,33,0,8
   8,75,90,22,0,6,5,203,35,203,18,1
   6,250,123,137,48,1,20,95,25,126,
   193,209,201,209,201,22690
60 PRINT "Data entry o.k." "m/c
   now ready for running": STOP
70 SAVE "GCODE" CODE 64000,199

```





Program two

```

10 REM GHOSTCHASE @ Tony Rickw
ood
20 GO SUB 100
25 LET s=0: LET v=5
30 GO SUB 6000
45 GO SUB 5000
50 INPUT "Basic or m/c(b/m)?";
g$
51 IF g$ <> "b" AND g$ <> "m"
THEN GO TO 50
60 GO SUB 1000
100 REM Initialize control vari
able
110 LET a=3: LET b=1: LET c=27:
LET d=1: LET e=3: LET f=19: LET
g=27: LET h=19: LET x=15: LET y
=10
120 LET k=a: LET l=b: LET m=c:
LET n=d: LET o=e: LET p=f: LET q
=g: LET r=h
130 RETURN
1000 REM Main Control Routine
1005 LET di=1: LET s=s+1
1010 LET xx=x: LET yy=y: PRINT
AT yy,xx;" "
1020 PRINT INK 1; OVER 1; AT b,
a;"T"; INK 2; AT d,c;"T"; INK 3;
AT f,e;"T"; INK 4; AT h,g;"T":
BEEP .005,45
1025 IF ATTR (y,x) <= 4 THEN G
O TO 3000
1030 LET x=x-(INKEY$="5")+(IN
KEY$="8"): LET y=y+(INKEY$="6
")-(INKEY$="7")
1035 LET di=di*(xx=x)*(yy=y)+(x>
xx)+2*(x<xx)+3*(y>yy)+4*(y<yy)
1036 IF x=1 THEN LET x=28
1037 IF x=29 THEN LET x=2
1040 IF ATTR (y,x)=6 THEN LET
x=xx: LET y=yy: GO TO 1070
1055 IF ATTR (y,x)=5 THEN LET
s=s+10: FOR i=1 TO 10: BEEP .005
,20: BEEP .005,30: NEXT i: GO TO
1070
1060 IF POINT (3+x*8,171-8*y)=1
THEN LET s=s+1: BEEP .005,30
1070 PRINT AT 21,8;s: PRINT AT
y,x;"OPQR"(di)
1080 IF ATTR (y,x) <= 4 THEN G
O TO 3000
1082 IF g$="m" THEN RANDOMIZE
USR 64027
1090 IF g$="b" THEN GO SUB 4000
1100 PRINT OVER 1; AT l,k;"T";
AT n,m;"T"; AT p,o;"T"; AT r,q;"
T"
1110 GO TO 1010
2000 REM Screen Cleared
2010 GO SUB 100
2020 GO SUB 5000
2030 GO SUB 1000
2040 RETURN
3000 REM Pacman eaten
3010 LET v=v-1: PRINT AT 21,28;
v
3020 FOR i=1 TO 20: BEEP .01,20:
BEEP .01,30: NEXT i
3030 IF v=0 THEN GO TO 3040
3035 PRINT INK 7; OVER 1; AT b,
a;"T"; AT d,c;"T"; AT f,e;"T";
AT h,g;"T"
3036 GO SUB 100
3037 GO SUB 1000
3040 CLS: PRINT AT 10,0;"YOU S
CORED ";s; AT 11,0;"ANOTHER GAME
?(y/n)"
3050 IF INKEY$="" THEN GO TO
3050
3060 IF INKEY$="n" THEN STOP
3070 RUN
4000 REM Ghost Control
4010 LET k=a: LET l=b: LET m=c:
LET n=d: LET o=e: LET p=f: LET q
=g: LET r=h
4020 LET a=a+(x>a)-(x<a): IF AT
TR (b,a)=6 THEN LET a=k
4030 LET b=b+(y>b)-(y<b): IF AT
TR (b,a)=6 THEN LET b=l
4040 IF a <> k OR b <> l THEN P
RINT OVER 1; INK 6; AT b,a;" "
4050 LET c=c+(x>c)-(x<c): IF AT
TR (d,c)=6 THEN LET c=m
4060 LET d=d+(y>d)-(y<d): IF AT
TR (d,c)=6 THEN LET d=n
4070 IF c <> m OR d <> n THEN P
RINT OVER 1; INK 6; AT d,c;" "
4080 LET e=e+(x>e)-(x<e): IF AT
TR (f,e)=6 THEN LET e=o
4090 LET f=f+(y>f)-(y<f): IF AT
TR (f,e)=6 THEN LET f=p
4100 IF e <> o OR f <> p THEN P
RINT OVER 1; INK 6; AT f,e;" "
4110 LET g=g+(x>g)-(x<g): IF AT
TR (h,g)=6 THEN LET g=q
4120 LET h=h+(y>h)-(y<h): IF AT
TR (h,g)=6 THEN LET h=r
4140 RETURN
5000 REM Print Maze
5005 PAPER 0: BORDER 0: INK 7: C
LS
5010 PRINT " CAAAAAAAAAAAAAAAAA
AAAAAAD"" BSSSSSSSSSSSSSSSSSS
SSSSSSSSSB"" BSCADSCANAISGSJAA
NADSCADSB"" BSB BSB BSSSSSSSSS
B BSB BSB"" BSEAFSEAFJAANAIAIS
EAFSEAFSB"" BSSSSSSSSSSSSSSSSS
SSSSSSSSSB"" BSJAISJANAIAISGSJAA
NAISJAISB"" BUSSSSSSSSSSSSSSSS
BSSSSSSSSSB"" EAAAAADSBSCAISJADS
BSCAAAAAF"" AAAAAAFSGSBSSSSSSB
GSEAAAAAF"" SSSSSSSSSSSSSSSSS
SSSSSSSSS "
5020 PRINT " AAAAAADSHSBSSSSSSB
SHSCAAAAAF"" CAAAAAFSGSEANAIAF
SGSEAAAAAD"" BUSSSSSSSSSSSSSBSS
SSSSSSSSSUB"" BSJADSJAAAAISGSJA
AAAIISCAISB"" BSSSBSSSSSSSSSSSS
SSSSSSSSSB"" KAISEAISHJAANAIAI
SHSJAFSJAL"" BSSSSSSSSBSSSSBSS
SBSSSSSSSB"" BSJAAAAAIAISGSJA
AMAAAAAIAISB"" BSSSSSSSSSSSSSSS
SSSSSSSSSB"" EAAAAAAAAAAAAAAAAA
AAAAAAAF "
5030 PRINT AT 21,2;"SCORE"; AT
21,22;"LIVES ";v
5040 RETURN
6000 REM UDG Setup
6010 FOR i= USR "a" TO USR "u"+
7: READ j: POKE i,j: NEXT i
6020 DATA 0,255,j,j,j,j,j,0
6030 DATA 126,j,j,j,j,j,j,j
6040 DATA 0,31,63,127,j,j,j,126
6050 DATA 0,248,252,254,j,j,j,12
6
6060 DATA 126,127,j,j,j,63,31,0
6070 DATA 126,254,j,j,j,252,248,
0
6080 DATA 126,j,j,j,j,60,24,0
6090 DATA 0,24,60,126,j,j,j,j
6100 DATA 0,248,252,254,j,252,24
8,0
6110 DATA 0,31,63,127,j,63,31,0
6120 DATA 126,127,j,j,j,j,126
6130 DATA 126,254,j,j,j,j,j,126
6140 DATA 126,255,j,j,j,j,j,0
6150 DATA 0,255,j,j,j,j,j,126
6160 DATA 62,127,248,240,j,248,1
27,62
6170 DATA 124,255,31,15,j,31,254
,124
6180 DATA 66,195,j,231,255,j,126
,60
6190 DATA 60,126,255,j,231,195,j
,66
6200 DATA 0,0,0,24,24,0,0,0
6205 DATA 60,126,219,255,255,255
,165,165
6210 DATA 0,0,60,126,j,60,0,0
6220 RETURN

```

use are: WALLS=yellow, DOTS=white, POWER PILLS=cyan.

The way to put these codes into the PRINT statements is described in Chapter 16 of the Spectrum manual, but to get you started, first bring down line 5010 with edit. Run the cursor to just past the quotes and change to extended mode (caps shift/symbol shift). Now hold the Capitals key and press key 6. You will see that everything that follows is now printed in yellow ink. Now run the cursor right by one space (to just before the first dot), change cursor to Extended again, and press Caps/7 to change back to white ink. Continue throughout until everything is the correct colour.

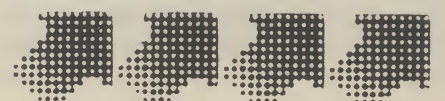


IMPORTANT NOTE: The game depends on having these colours right. It also depends on the two exits from the maze being sealed to the ghosts (but not to Pacman), to allow Pacman to shake them off. This is done by putting an invisible wall at the two exits by printing the blank character positions to the left and right of the middle row of dots in yellow ink with the appropriate colour code in line 5010. You will see how this works when I explain ghost control.

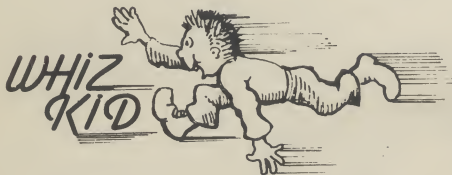
Now you can enter the rest of the program and test it as a whole, although it would be a good idea to do an intermediate SAVE of your work so far.



When RUNNING the whole program, it will begin by asking whether you want Basic or M/C? This gives you the option of letting your Spectrum control the ghosts, using EITHER the Basic in lines 4000-4140 OR by using the machine code set up by Program one. They do exactly the same



job, though with a remarkable difference in speed. To satisfy yourself that these are directly interchangeable, look at lines 1082/1090 which call the appropriate routine according to the response to the only prompt used. Make sure you give the program a thorough testing in



each mode, although I guarantee you will not be using the Basic option for very long!

If you want to keep **Ghostchase** in your library of games, it would be a good idea to put the m/c itself (not Program one, which only sets it up) onto tape immediately after your dump of Program two. First, get a new dump of Program two onto tape with the



following line added: 15 LOAD "GCODE" CODE. If you want auto start, then dump by typing SAVE "ghost" LINE 1. Assuming that the m/c is in memory, dump it onto tape using SAVE "GCODE" CODE 64000,199. LOADing "ghost" will now automatically LOAD the m/c and RUN.

A few words about playing the game, as I have not included instructions in the program. Pacman control is by cursor keys. As usual, eat as many dots and power pills (10 point bonus) without getting caught, though you do have five lives. A screenful (300 points) earns you another screenful.

Obviously, you want to know how the machine code works, because, unlike routines I have presented so far, this one is not



portable. Special effects m/c routines seen previously can be used by any Basic program. They

are portable in the sense that they do not depend on, or affect anything else, and are also relocatable to use any available memory space. The routine used here obviously does affect, and is affected by, the environment in which it operates. So, if you want to supercharge a chase routine of your own (not necessarily of the maze variety), you really must be able to understand it and adapt it to your own program.

The key to understanding the machine code is the Basic routine in lines 4000-4140. The principle is always to get the computer to calculate intelligently the new coordinates of the chaser(s) in order to place it nearer the character being chased. There are many levels of artificial intelligence which could be used (to prevent the chaser from staying blocked for example). Here, though, it is simply a matter of getting the four ghosts nearer without going through walls. Line 4010 starts by storing all the old coordinates as figure one:

Fig. one

Ghost	New/Current Coords		Coords	
	x	y	x	y
Blue	a	b	k	l
Red	c	d	m	n
Magenta	e	f	o	p
Green	g	h	q	r

Pacman coordinates are called x,y. Before calculating new positions, current positions must be stored. This is to be able to erase old ghosts and for re-setting positions if a move is invalid. Lines



4020 and 4030 deal with x and y coordinates for the blue ghost (a,b). Using $x > a$ and $x < a$ for pacman to right or left of the blue ghost, a is increased or decreased by one.

Similarly for b in the vertical sense (note: $x = a$ or $y = b$ means no change). Both a and b must be tested separately to allow the ghost to move horizontally, vertically or diagonally toward Pacman. The only test for a valid move is that it does not collide

with a wall.

No off screen tests are necessary because the ghosts can never get out of the maze. So all we need to test is $ATTR(b,a)=6$ to tell the computer that there is a (yellow) wall at the new position



calculated for the blue ghost. If true, the position reverts back to k and/or l. Other ghosts are handled in the same way.

What about collision with Pacman and other ghosts? The "Pac-



man eaten" condition is picked up in the main control routine at line 1080. Collision with another ghost is a bit more subtle. We cannot test $ATTR(b,a) < 4$, for example, to see if there is another ghost already there, for the simple reason that no new ghosts can be printed until ALL new positions have been calculated. Line 4030 solves the problem for the blue ghost (4070 and 4100 for magenta and green). In effect, this line is saying that, if the blue ghost has been moved ($a < > k$) or ($b < > l$) then temporarily PRINT a piece of invisible wall OVER the new position (to preserve the dot) to prevent it from being occupied by another ghost. This is only temporary while computer control is inside the ghost control subroutine.



Soon after control is returned to the main program (starting at line 1000), the ghosts are printed and so overwrite the invisible wall. Obviously, no such device is required for the green ghost as this is the last to be moved.

Do try to understand thoroughly how the subroutine starting at line 4000 works. You will then have a much better chance of understanding the machine coded version which I will be explaining in the next article.

THE PRIZE



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A

B

0

1

A movie poster for "Bubble Trouble". At the top, it says "Presented by" above the title "bubble trouble" in a stylized font. Below the title is a large, glowing bubble containing a man in a striped shirt and a woman in a pink dress. The background is dark blue with some light effects. In the bottom right corner, there is a small logo that says "COLUMBIA TRISTAR".

1

50 different screens of mayhem." "A fun game for all ages . . . which I thoroughly enjoyed." — Home Computing Weekly.



Your city is under constant attack from aliens which nibble the dam which protects the city from being flooded. Fire at them with your one working missile launcher in order to save your city.

Nibbler was written for the Spectrum or Spectrum Plus by Jason Adair of Camberley, Surrey. Underlined characters are those to be entered in graphics mode.

```

1 BORDER 4: PAPER 1: PRINT I
NK 7; AT 1,8;"1984 J.ADAIR @ ":
PAUSE 50
2 CLS : LET m$=" NIBBLERS
": FOR q=19 TO 1 STEP -2: PRINT
AT q,8; INK 0; PAPER 7; BRIGHT
1; FLASH 1;m$: BEEP .021,q+10:
BEEP .018,q+13: BEEP .008,q+16:
NEXT q: PAUSE 60: CLEAR
3 PRINT INK 6;" I N S T R
U C T I O N S": PRINT "
-----"
4 PRINT INK 3; AT 2,4;"AAAAA
AAAAAAAAAAAAAAAAAAAA"
5 PRINT INK 7; AT 3,11;"NIBB
LERS"; AT 5,4;"YOUR CITY IS UNDE
R CONSTANT"; AT 6,4;"ATTACK FROM
ALIENS."; AT 7,4;"THEY TAKE GRE
AT"; AT 8,4;"PLEASURE IN NIBBLIN
G, THE"; AT 9,4;"WALLS OF YOUR CI
TY'S DAM"
6 PRINT INK 7; AT 11,4;"UNFO
RTUNATELY, ONLY ONE"; AT 12,4;"MI
SSILE LAUNCHER IS IN"; AT 13,4;"
WORKING ORDER. YOU MUST"; AT 14,4
;"FIRE IT AT THE ALIEN"; AT 15,4
;"NIBBLERS IN ORDER TO"; AT 16,4
;"SAVE YOUR CITY"
7 PRINT INK 6; AT 19,5;"USE
1'OR 'O' TO FIRE!"; AT 20,8;"'O' TO
START"
8 PRINT INK 6; AT 17,4;"SHOO
T '6' TO SAVE THE CITY!"
10 PAUSE 1000
20 FOR f=0 TO 7: READ z: POKE
USR "a"+f,z: NEXT f
30 FOR f=0 TO 7: READ z: POKE
USR "b"+f,z: NEXT f
31 FOR f=0 TO 7: READ z: POKE
USR "c"+f,z: NEXT f
32 FOR f=0 TO 7: READ z: POKE

```

```

USR "d"+f,z: NEXT f
33 FOR f=0 TO 7: READ z: POKE
USR "e"+f,z: NEXT f
47 FOR f=0 TO 7: READ z: POKE
USR "f"+f,z: NEXT f
60 CLS
70 FOR f=20 TO 5 STEP -1
80 PRINT INK 5; AT f,0;"CCCCC
C"; INK 6;"BBB"
90 NEXT f
100 PRINT INK 6; AT 4,6;"BBB"

110 PRINT AT 21,0;"(32*g3)"
120 PRINT AT 20,10;"(ig1:isp:s
p:4*isp:g5:isp:ig1:2*g5:isp:ig1:
ig2:sp:isp:sp:3*isp)"
130 PRINT AT 19,10;"(isp:
g5:sp:g5) /\ + (ig5:ig2)"
135 PRINT INK 3; AT 19,11;"E";

AT 20,25;"E"; AT 19,13;"EE E"
145 PAUSE 60
150 LET sc=0
155 LET x=29
160 LET h= INT ( RND *21): IF h
>16 OR h<7 THEN GO TO 160
170 GO SUB 500
200 GO TO 170
500 PRINT INK 2; AT h,x;"A": B
EEP .01,20:
520 GO SUB 700
540 IF INKEY$ ="0" THEN GO TO
600
545 IF INKEY$ ="1" THEN GO TO
600
550 RETURN
600 FOR f=18 TO 5 STEP -1
605 IF SCREEN$ (f,11) <> " " T
HEN GO TO 2000
610 PRINT INK 7; AT f,11;"E";:
PAUSE 1: PRINT AT f,11;" "
615 BEEP .005,f
620 PRINT INK 4; AT h,x;"A"
625 GO SUB 700
630 NEXT f
660 GO TO 540
700 IF SCREEN$ (h,x-1) <> " "
THEN PRINT AT h,x-1;" ": BEEP
.1,5: GO TO 155
710 LET x=x-2
715 IF x=7 THEN GO TO 1000
720 RETURN
1000 PRINT AT h,x-1;" ": BEEP
.1,10: PRINT INK 5; AT h,x-1;"
CCC"
1010 FOR f=h TO 20

```

```

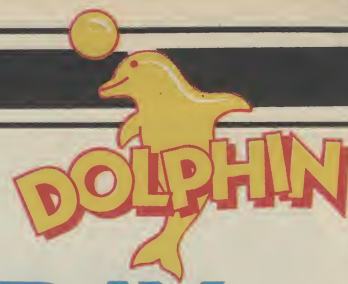
1020 PRINT INK 1; AT f,8;"C": B
EEP .1,10
1030 NEXT f
1050 FOR f=20 TO h STEP -1
1060 PRINT OVER 1; INK 5; AT f,
9;"CCCCCCCCCCCCCCCCCCCCCCCC"
1070 PRINT INK 7; AT 0,10;"YOUR
CITY IS FLOODED."; AT 2,10;"YOU
R SCORE=";sc; AT 4,10;"PRESS ANY
KEY TO "; AT 5,10;"START AGAIN.
"
1080 IF INKEY$ =" " THEN GO TO
1080
1090 RUN
2000 FOR w=1 TO 15: PRINT INK 7
; AT f,11;"D";: PAUSE 2: PRINT
AT f,11;" ": PAUSE 1: BEEP .02,w
*2: NEXT w
2010 FLASH 0: PRINT AT f,11;" "

```

```

2020 LET sc=sc+1
2025 PRINT AT 15,2;sc
2026 IF sc<6 THEN GO TO 155
2029 PRINT INK 7; AT 0,10;"YOU
HAVE SAVED YOUR"; AT 1,10;"CITY"
; AT 3,10;"YOUR SCORE=";sc; AT 5
,10;"PRESS ANY KEY TO "; AT 6,10
;"START AGAIN...."
2030 IF INKEY$ =" " THEN GO TO
2030
2040 RUN
9005 DATA BIN 00111100, BIN 011
01110, BIN 11111111, BIN 0000111
1, BIN 00001111, BIN 11111111, B
IN 01111110, BIN 00111100
9010 DATA BIN 11111111, BIN 100
000001, BIN 10000001, BIN 1000000
01, BIN 10000001, BIN 11111111
BIN 10000001, BIN 11111111
9020 DATA BIN 10101010, BIN 010
10101, BIN 0, BIN 10101010, BIN
01010101, BIN 0, BIN 10101010, B
IN 01010101
9030 DATA BIN 10011001, BIN 010
11010, BIN 01010101, BIN 1111111
1, BIN 11111111, BIN 01010101, B
IN 01010101, BIN 10011001
IN 01010101, BIN 00011000, BIN 000
9040 DATA BIN 00011000, BIN 001111
1000, BIN 00111100, BIN 01111110, B
IN 01111110, BIN 11111111
9050 DATA BIN 00011000, BIN 001
11100, BIN 00111100, BIN 0011110
0, BIN 00011000, BIN 00111100, B
IN 01111110, BIN 01111110

```

SINCLAIR PROGRAMS COMPUTER HOLIDAY

Sinclair Programs and Dolphin Holidays have combined to produce a computer holiday offer unique to this magazine.

All participants will have exclusive use of a Spectrum (or a ZX-81 if you so choose), help from a computer expert, access to the camp's extensive software library and to a vast variety of hardware ranging from speech synthesis systems to robot buggies.

Also available on the camps will be an enormous range of sports and activities. Tennis, swimming, sailing and BMX bikes are just a few of the options available when you are not computing.

The Basic Holiday: Down from £144 to £134. This course allows you to learn programming and software applications at your own rate as you solve problems in the fantasy adventure world of our hero, Chan. There are opportunities to explore everything from Logo to machine code and robot building, all at your own pace.

The Advanced Holiday: Down from £154 to £139. Aimed at those with an extensive knowledge of programming, including simple machine code. The course takes you inside computers to show how they work, the particular facets of each machine's processor, operating system and memory. Other advanced computer work includes digital electronics, robot control, vision

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Crowthorne	8-12 years 12-16 years	20, 27 July 3, 10, 17, 24 August
Harrogate	8-12 years 12-16 years	20, 27 July 3, 10, 17, 24 August

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Harrogate	12-17 years	20, 27 July 3, 10, 17, 24 August
Crowthorne	12-17 years	20, 27 July 3, 10, 17, 24 August

EXCLUSIVE SINCLAIR PROGRAM: £144 + VAT

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Wellington college

ture over £30 worth of top quality software free to participants; a visit from the editorial team of *Sinclair Programs* to explain how a computer magazine is produced; on the spot evaluation of your software for inclusion in *Sinclair Programs*, visits from top games programmers and much more.

The Sinclair Program will run at Wellington College, Crowthorne, Berkshire for a week, beginning on August 3rd, 1985. It is open to all readers aged 12-17.

To apply for any of the holidays, simply complete the form below, make sure your parent or guardian has signed it, and post it to Dolphin Holidays.

See you at Wellington College!

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2 ADVANCED COMPUTER CAMP ☐

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<input type="checkbox"/> 3rd AUGUST	<input type="checkbox"/> 10th AUGUST
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3 SINCLAIR PROGRAMS COMPUTER CAMP ☐

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What time of day is best for Dolphin to phone?

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Special Sinclair Program: Down from £164 to £144. Will be set at the same level and cover the same subjects as the Advanced Course. It will also fea-

Max Headroom

Max Headroom is possibly the only TV presenter who has to be turned on to be interviewed. Colette McDermott managed it.

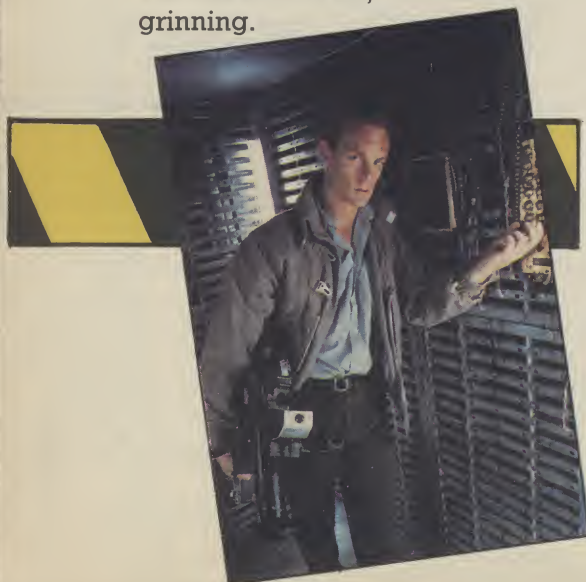
A DAMP morning in Belfast. Rain clouds darken the streets, which are occasionally flooded with light from the displays of the stores and shops.

An army tank trundles loudly into the street and stops opposite a large crowd of waiting shoppers and onlookers.

A squad of soldiers dressed in combat uniform dash from the now silent machine. They cross to the crowd and join in the conversation.

They are all here for the first public appearance of **Max Headroom**. The venue, a furniture store somewhere in Belfast.

Max works 24 hours a day on Big-Time Cable TV so he can only make his appearance via a satellite link-up. Screens have been erected around the area to allow total visual display. After a few moments the screens burst into life. Max is on air, grinning.



"I should like to express my thanks for The Save The Children Fund for asking me to appear here today on their behalf. . ."

A roar of laughter rises from the assembled crowd.

A puzzled expression flits across his face. Somebody back at the station obviously speaks to him.

"Did I get that right?" he enquires, the disarming smile reappears and he continues to wreak havoc upon the ceremony to the delight of the crowd.

Max Headroom first appeared on our screens in April as a com-



puter-generated presenter of pop videos for Big-Time Cable television.

He was created by the nasty, runny-nosed Bryce at Network TV. His brain pattern, taken from top investigative reporter Edison Carter, has ensured a highly developed computer being.

Big-Time TV, which is run by Black Reg and Dominic, stumbled upon him when he accidentally appeared on their station. Overnight he turned their ailing station into a going concern.

His show broadcasts around the clock featuring his own taste in contemporary music. Channel 4 tune into him for a brief 30 minutes every Saturday.

Despite being computer orientated Max is not, as yet, completely bug-free. His speech is frequently interrupted as he loses control of his vocal cords. His conversation is garbled and his movements jerky. As he turns his head he does not always manage to coordinate his body movements.

All these points make him a likeable near-human being and we love to watch him make mis-

takes.

During breaks between each video Max entertains us with jokes and all sorts of useless information.

His skin has a deep tan, with a shiny plastic quality, his hair is blonde although solid in appearance and his eyes are pale blue



and non-reflective. A ready smile gives him a likeable quality that all previous machines lacked.

Following the live link-up with Belfast Max has agreed to an interview with *Sinclair Programs*.

The interview takes place from a special studio. A large screen holds centre spot in the room with two smaller televisions on either side.

The lights go down and the screens flicker into life. Max appears, grinning broadly, and the screens go black again.



An interval of seconds, then Max re-appears, dancing to a tune playing in the background. One of his aides informs him that he is being viewed. He turns his gaze towards the screen, says "Hi!" and continues to dance.

Max, I venture, thanks for see-

oom



ing me. "Sure, wha. . ." His voice trails away. He stops, shakes his head from side to side as though attempting to dislodge a foreign object.

"Aah! that's better." He grins, sits back and starts to hum to himself.

I ask Max to tell us his future plans. He continues to hum for a few minutes and then replies.

"Well, I don't have much spare time, and most of it is taken up with organisational work for the World Golf Foundation. I want to interview people on the programme, but I have to join the Clive James party set to meet the really interesting people."

I ask him his views on drinking, smoking and drugs, and expect at least a restrained answer, but he informs me that "I may be accused of being old-fashioned, but I like them all."

I speculate that perhaps Max has visions of becoming a newsreader.

"Oh, no! I find them very sad, sitting there, just heads and shoulders — for all we know they haven't got any legs!" he exclaims, with a shocked expression at this thought, and then a broad grin.

What about hobbies; languages perhaps? I heard you speak German once on your show.

"Yes I can converse in 23 languages, but that will soon be 24.

This is despite the fact that I had to give up my Turkish evening class, it clashed with 'Around with Alice', I am currently struggling with Farsi"

Excuse me Max, isn't that 'Aliss.'

"No, I mean Farsi."

Throughout our conversation Max has continued to hum to himself and to shake his head to the



rhythm. I begin a question, attempting to bring a note of commonsense back into the proceedings, which I feel are getting out of hand. Max, is now vanishing from the screen as he becomes further engrossed in the tune.

Max, I try again, we all think we know your taste in music from watching your show, but do you have a favourite?

"My pride and joy is 'Digital Watch Tunes, Vol. 2', and '20 Golden Golf Signature Tunes', which contains all the best stuff between the '82. . ."

Max disappears from the screen, his voice fades and he

returns still dancing.

"... '84 Dunhill Masters. I also have a bootleg version of Ballesteros whistling. . ."

He disappears again. At this point I protest. He apologises, sits down and looks out of the screen attentively.

Can you distinguish between video and reality, Max? He looks serious.

"Yes, of course — what do you think I am, some kind of artificial creation?"

Well, are you independent of outside forces, can you think for yourself?

"Of course I can — when the producer says so."

My allotted time with Max is now drawing to a close. I thank him for talking with me. He grins and I leave.

The show has already produced a viewing audience of over one million according to producer, Peter Wagg and he promises that Max has lots more plans for the future.

"Max appears for over three minutes soon being interviewed by someone," said Peter refusing to say who. As I leave the studio a large poster of Max smiles down at me.



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As the land dies in the grip of the black desolation a hero must be found to locate and destroy the 12 hour glasses thus releasing the months and returning Dorcasia to the natural forces of the seasons.

Each glass has a RUNIC inscription around its base which you must read and understand. Only saying these words will lift that part of the spell. To protect the hour glasses Zendos has placed them in 12 separate rooms in his castle, each room linked to a different exterior gateway by a devious route.

Depending on which entrance you select Zendos casts spells which change the locations of rooms within his castle to confuse you. The menacing creatures and challenging problems which confront you at every turn mean that only the brave and the clever will succeed.



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You awake from a deep, troubled sleep, to find you have fallen from a large four-poster bed.....

HOW do you follow the granddaddy of all adventure games? Melbourne House think that they know. Their latest adventure **Mordon's Quest**, written by John Jones-Steele, has been designated the sequel to **Classic Adventure**.

Classic Adventure was released by Melbourne House in January 1984. It was adapted by John Jones-Steele from the original Crowther and Woods game **Adventure**.

In its original form **Adventure** was designed for a 200K computer and written in Fortran. Different versions of it have since been launched by several software houses.

John used to run his own soft-

ware house, Abersoft, and had produced several ZX-81 and Spectrum games before Melbourne House discovered him.

Classic Adventure was originally published under the Abersoft label. By then John was feeling the pressure of running a business and maintaining his link with the University College of Wales where he worked full-time on the main research computer.

When Melbourne House asked him to work with them and publish the game under their label he quickly realized that this was his chance to keep both feet dipped in the water and avoid the headaches of administering a business.

The original idea for **Mordon's Quest** was developed by Peter Moreland and Peter Donne, hence the title of the game. They wrote the book form, while John adapted it to fit the Spectrum.

Like its predecessor **Mordon's Quest** is a pure text adventure. It

features 156 different locations and a vocabulary of more than 400 words.

John has designed the text to fit 50 characters to a line, rather than the usual 32 characters. He achieved this by redefining the character set and believes this has created the impression of a 'page' of text.

The adventure begins in the world of reality time Lords.

Mordon is a Lord of reality who

reveal some of it without giving too much away.

In the first stages of the game you will come upon creatures such as wild pigs, pygmies, Tarzan and a frog.

You must also safely pass quicksand and a waterfall before proceeding to the next set of tasks, the time zones.

All the parts of Mordon's machine are hidden within the zones

Mordon's QUEST

must seek out pieces of his machine, which is vital to the structure of our universe.

He is the highest amongst the Ancient Order of The Lords of Reality. They are locked in a struggle which, if lost, will cause the destruction of the many realities that co-exist in our universe."

PHEW!

He must seek out a champion to travel through reality to solve the daunting tasks that will save the fabric of the universe.

The introduction to the game explains how you awake from a troubled sleep upon a four poster bed.

"Despite the richness of the bed and the oriental carpet underfoot, the room is sparsely decorated. An indefinable atmosphere permeates the room, as if some great tragedy once occurred here. . ."

I don't want to spoil your fun in playing this adventure but I can

and you may enter any one at will, assuming you are in total control of your circumstances.

One of the Zones is called the Metallic Zone and the main task here is to de-activate the reactor held within its chambers.

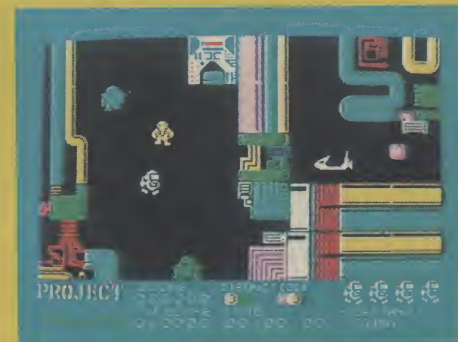
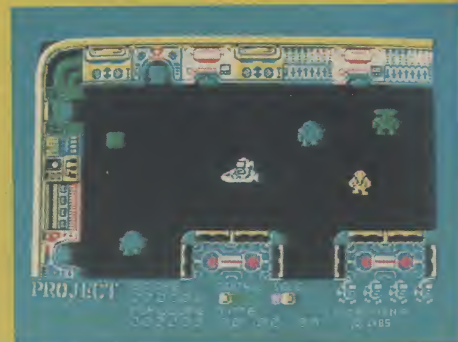
The main peril of the second zone, is that it is underwater. This is known as the Underwater zone and you must search the water, equipped with your aqua-lung but avoid running out of oxygen.

The Roman zone involves you in a battle with Gladiators and taking part in a puzzle. Within this section is the Greek subzone and the main task here involves a confrontation with a Minotaur.

John is at great pains to emphasise that his game has not been designed for beginners. This sort of remark is bound to whet the appetite of all adventure players.

This is the first adventure from Melbourne House this year, and it follows the release of their successful arcade game **Starion**.

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MICKY'S MINE FIELD



Move around the field collecting the power pills. Avoid the ghosts and arrows which will kill you on contact. Use the cursor keys to move.

Micky's Mine Field was written for the Spectrum or Spectrum Plus by a reader from Tuffley, Gloucestershire.

```
10 REM **MICKY'S MINE FIELD**
20 LET HI=0
30 LET SCR=0: LET D1=10: LET A
1=1
35 LET T=3000
40 GO SUB 9000
45 GO SUB 9000
90 BORDER 0: PAPER 0: INK 0: B
RIGHT 1: CLS
100 LET A=15: LET D=10
110 PRINT AT D,A: INK 4;"M"
114 LET T=T-1: IF T <= 0 THEN
GO TO 300
115 PRINT AT 0,2: INK 5;"SCORE
- ";SCR: AT 0,15;"T' MINUS ";
T;" "
116 PRINT AT D1,A1: INK 0;" ";
INK 7;"C": INK 0;" "; INK 7;"
C": INK 0;" "; INK 7;"C": LET
A1=A1+1
117 IF A1 >= 23 THEN PRINT AT
D1,A1: INK 0;" ": LET A
1=1: LET D1=D1+1
118 IF D1 >= 21 THEN LET D1=2
```

```
120 PRINT AT INT (2+19* RND )
, RND *31: INK 6;"G"
130 PRINT AT INT (2+19* RND )
, RND *31: INK 2;"A"
140 IF INKEY$ ="5" THEN LET A
=A-1: PRINT AT D,A+1: INK 0;" "
150 IF INKEY$ ="6" THEN LET D
=D+1: PRINT AT D-1,A: INK 0;" "
160 IF INKEY$ ="7" THEN LET D
=D-1: PRINT AT D+1,A: INK 0;" "
170 IF INKEY$ ="8" THEN LET A
=A+1: PRINT AT D,A-1: INK 0;" "
180 IF ATTR (D,A)=66 OR ATTR
(D,A)=71 THEN GO TO 300
190 IF ATTR (D,A)=70 THEN BEE
P .01,20: LET SCR=SCR+10
200 IF A<0 THEN LET A=0
210 IF A>31 THEN LET A=31
220 IF D<2 THEN LET D=2
230 IF D>21 THEN LET D=21
240 GO TO 110
300 REM **DEATH ROUTINE**
305 FOR X=1 TO 5
310 PRINT AT D,A: INK RND *6;
"H": BEEP .003, RND *25
320 PRINT AT D,A: INK RND *6;
"I": BEEP .003, RND *25
330 PRINT AT D,A: INK RND *6;
"J": BEEP .003, RND *25
340 PRINT AT D,A: INK RND *6;
"K": BEEP .003, RND *25
350 NEXT X
360 PRINT AT D,A: INK 0;" ": P
AUSE 200
370 FOR F=0 TO 21: PRINT AT F,
```

```
0;" "
380 BEEP .003,0
390 BORDER RND *6
400 NEXT F: BORDER 0
410 FOR L=1 TO 10
420 PRINT AT 7,L: INK 5;" GAME
"; AT 7,26-L;"OVER ": BEEP .003,
10: NEXT L
430 PRINT AT 12,9: INK 6;"SCOR
E:";SCR
440 IF SCR>HI THEN LET HI=SCR
450 PRINT AT 14,6: INK 4;"HI-S
CORE:";HI
460 PRINT AT 20,0: FLASH 1;"
PRESS ANY KEY TO CONTINUE "
```

```
470 PRINT AT 21,0: INK 7: FLAS
H 1;" PRESS ANY KEY TO PLAY AG
AIN "
490 PAUSE 0: PAUSE 0: CLS : GO
TO 30
9000 REM ***UDGS***
9005 RESTORE 9100
9010 FOR F=0 TO 7: READ D: POKE
USR "M"+F,D: NEXT F
9015 FOR F=0 TO 7: READ D: POKE
USR "A"+F,D: NEXT F
9016 FOR F=0 TO 7: READ D: POKE
USR "G"+F,D: NEXT F
9017 FOR F=0 TO 7: READ D: POKE
USR "C"+F,D: NEXT F
9030 FOR F=0 TO 7: READ D: POKE
USR "H"+F,D: NEXT F
9040 FOR F=0 TO 7: READ D: POKE
USR "I"+F,D: NEXT F
9050 FOR F=0 TO 7: READ D: POKE
USR "J"+F,D: NEXT F
9060 FOR F=0 TO 7: READ D: POKE
USR "K"+F,D: NEXT F
9070 RETURN
9100 REM **DATA**
9110 DATA 126,219,129,219,255,19
5,102,60
9120 DATA 126,255,153,153,255,19
5,255,170
9130 DATA 0,0,24,60,60,24,0,0
9140 DATA 8,12,254,255,255,254,1
2,8
9200 DATA 35,118,140,67,34,89,95
,34,0,24,40,28,34,20,8,0,136,108
,18,33,02,148,106,6,225,94,33,1
8,41,86,164,65
```

Cruncher muncher

You have 150 seconds in which to cross the maze before you. Each new gate will only appear when you have moved through the last. Move up and down with keys 6 and 7 and through gates with 8.

Cruncher Muncher was written for the Spectrum or Spectrum Plus by Wayne Starr and James Morgan of Stanmore, Middlesex.

```
1 PRINT AT 0,6: FLASH 1: INK
3; PAPER 6;"(18*G6)"
2 PRINT AT 1,6: FLASH 1: INK
3; PAPER 6;"(G6)": AT 1,7: FLAS
H 0: INK 0: PAPER 7;"CRUNCHER MU
NCHER": AT 1,23: FLASH 1: INK 3;
PAPER 6;"(G6)"
3 PRINT AT 2,6: FLASH 1: INK
3; PAPER 6;"(18*G6)": PAPER 7
```

```
4 LET A$="" THE GAME
THE IDEA OF THE GAM
E IS TO RACE A FRIEND TO SEE WHO
CAN GET FROM ONE SIDE OF THE MAZ
```

E TO THE OTHER SIDE THE FASTEST. (GOOD LUCK)...

THE KEYS ARE... UP(7)DOWN(6)RIGHT(8)"

```
5 PRINT AT 6,0;: FOR n=1 TO
LEN A$: INK RND *6
6 PRINT A$(N);: BEEP .01, RND
*69: NEXT n
7 PRINT AT 19,8;"HIT ANY KEY
"
```

```
8 PAUSE 9000
9 BORDER 5: PAPER 5: CLS : IN
K 1
```

```
10 FOR n= USR "a" TO USR "f"+
7: READ a: POKE n,a: NEXT n
20 DATA 60,126,239,252,248,255
,126,60
21 DATA 60,126,219,255,255,195
,255,219
```

```
22 DATA BIN 00000000, BIN 000
00000, BIN 00011000, BIN 0011110
0, BIN 00111100, BIN 00011000, B
IN 00000000, BIN 00000000
```

```
23 DATA BIN 10000001, BIN 100
00001, BIN 11111111, BIN 1000000
1, BIN 11111111, BIN 10000001, B
IN 11111111, BIN 10000001
```

```
24 DATA BIN 00100100, BIN 011
00110, BIN 11110111, BIN 1111111
1, BIN 11011111, BIN 11111111, B
IN 01111110, BIN 00111100
```

```
25 DATA BIN 00111100, BIN 011
11110, BIN 11111111, BIN 1111101
1, BIN 11111111, BIN 11011111, B
IN 01100110, BIN 00100100
```

```
30 LET c=0: LET r=0
40 FOR r=1 TO 19
```

```
50 PRINT " CBCBCBCBCBCBCBCBCB
CBCBCBCBCB"
```

```
51 NEXT R
62 LET N=0
70 LET r=0: LET c=0
80 LET h= INT ( RND *19)
90 PRINT AT h,c+1;"D": INK 2
```

```
95 PRINT AT r,c;"A"
96 IF INKEY$ ="6" THEN PRINT
AT r,c;"E"
97 IF INKEY$ ="7" THEN PRINT
AT r,c;"E"
99 PRINT AT 21,0;"TIME TACKEN
T+ ";N
```

```
100 FOR d=0 TO 10
110 NEXT d
120 PRINT AT r,c;" "
130 IF INKEY$ ="8" AND r=h THE
N LET c=c+2: BEEP .1,2: GO SUB
80
```

```
140 IF INKEY$ ="7" THEN BEEP
.1,0: LET r=r-1
150 IF INKEY$ ="6" THEN BEEP
.1,0: LET r=r+1
```

```
160 IF r<0 THEN LET r=0
170 IF r>19 THEN LET r=19
173 IF c>28 THEN FOR n=0 TO 10
: BORDER RND *7: PAPER RND *7:
CLS : PRINT AT 10,10;"GREAT GO
ING": BEEP .01, RND *69: NEXT n:
PAPER 7: RUN
```

```
185 LET N=N+1: IF n=150 THEN B
ORDER 0: PAPER 0: CLS : INK 7: P
RINT AT 10,10;"BAD LUCK": STOP
```

```
190 GO TO 95
```


Frogger Jr

Before Frogger was a frog, what was he? A tadpole, of course. Life was not particularly easy as a tadpole either. Keep Frogger Jr alive by eating as much algae as possible. Missing any piece of algae will result in lethal bacteria being shot at you. Move up and down with keys 6 and 7 and check your energy by pressing key zero.

Written for the Spectrum or Spectrum Plus by Nicholas Taylor of Burton-on-Trent, Staffordshire. Underlined letters are those to be entered in graphics mode.

```

10 GO SUB 9000: REM GRAPHICS
20 GO SUB 8000: REM SET UP
100 REM *****VARIABLES*****
110 LET x=11: LET y=30
120 LET en=0
125 LET n=0
130 LET a= INT ( RND *19)
135 LET n=n+1
140 LET b=k+1
150 LET f=18: LET h=29
1000 REM ***MAIN GAME***
1005 PRINT AT 0,20;"LEVEL=";k

1010 PRINT AT x,y; PAPER 5;"AC"
1020 PRINT AT x,y; PAPER 5;"AB"

1030 IF INKEY$ ="6" OR INKEY$
="7" THEN GO SUB 5000: REM MOVE
SUB
1040 PRINT AT a,b; INK 2; PAPER
5;"*": PRINT AT a,b-1;" "
1050 LET b=b+1
1055 PRINT AT f,h;"(g5)"; AT f+
1,h;"(g5)"
1060 IF a=x AND b=y THEN LET en
=en+10: PRINT AT a,29;" ": BEEP
.1,10: GO TO 130
1070 IF INKEY$ ="0" THEN GO SU
B 6000
1075 IF en=-100 THEN PRINT AT
0,0;"YOU RAN OUT OF ENERGY AND D
IED": GO TO 7000
1100 IF b=31 THEN PRINT AT a,3
0;" " LET en=en-10: GO TO 1310

1300 IF n=51 THEN GO TO 7000: R
EM END OF GAME
1305 GO TO 1000
1310 REM SHOOT
1313 FOR j=1 TO 20
1315 PRINT AT x,y;"AC"
1320 LET p= INT ( RND *18)
1330 FOR q=k TO 30
1340 PRINT AT p,q;" ~"
1345 IF p=x AND q=y THEN GO TO
7000
1350 BEEP .01,50
1360 NEXT q
1365 IF INKEY$ ="7" OR INKEY$
="6" THEN GO SUB 5000
1370 PRINT AT p,q;" "
1380 NEXT j
1400 GO TO 130
5000 REM MOVE SUBROUTINE
5010 IF INKEY$ ="6" AND x<19 TH
EN LET x=x+1
5020 PRINT AT x-1,y;" "
5030 IF INKEY$ ="7" AND x>0 THE
N LET x=x-1
5040 PRINT AT x+1,y;" "
5100 RETURN
6000 REM ENERGY REPORT
6100 IF en>100 THEN PRINT AT 2
1,0;"ENERGY REPORT=O.K."
6200 IF en <= 100 THEN PRINT A
T 21,0;"ENERGY REPORT=NOT GOOD"

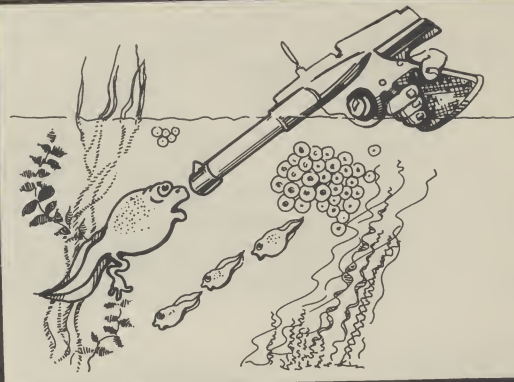
6300 IF en<-10 THEN PRINT AT 2
1,0;"ENERGY REPORT=DANGEROUS"
6400 PRINT AT 0,0; FLASH 1; BRI
GHT 1;"ENERGY=";en: BEEP .01,5

6500 PAUSE 1: PAUSE 1: PAUSE 0

6600 PRINT AT 21,0;"
": PRINT A
T 0,0;" "
6700 RETURN
7000 PRINT AT 10,13; FLASH 1; B
RIGHT 1;"GAME OVER": FOR n=0 TO
50: BEEP .01,n: NEXT n
7030 PRINT AT 14,10;"ENERGY=";e
n
7050 LET en=en/5
7060 PRINT FLASH 1; BRIGHT 1; A
T 12,14; INT en;"%"
7100 PAUSE 1: PAUSE 0: GO TO 20

8000 BORDER 5: PAPER 5: CLS : IN
K 0
8050 PRINT AT 0,10;"FROGGER JR"
: PRINT OVER 1; AT 0,10;"-----"

```



```

8070 PRINT
8100 PRINT "YOU ARE A SMALL TADP
OLE IN A""RIVER.TO GROW INTO A
FROG YOU""MUST EAT THE ALGAE AS
IT SWIMS""BY YOU."
8200 PRINT FLASH 1; BRIGHT 1;"6
=DOWN""7=UP""ENERGY REPORT=0"

8205 PRINT AT 10,0;"THE ENERGY
REPORT TELLS YOU HOW""MUCH ENER
GY YOU HAVE LEFT""AND YOUR ENER
GY STATUS.""IF YOU MISS ANY AL
GAE YOU'LL""HAVE BACTERIA SHOT
AT YOU.""IF THIS HAPPENS GET TO
YOUR""BASE AT THE BOTTOM OF TH
E""SCREEN.""*10"
8210 INPUT "ENTER LEVEL (2 TO 15
(2=EASY))";k
8220 IF k<2 OR k>15 THEN GO TO
8210
8300 PRINT AT 20,0;"PRESS ANY K
EY TO PLAY"
8400 PAUSE 1: PAUSE 0: CLS
8450 FOR g=1 TO 20: PRINT AT g,
k-1; INK 4; FLASH 1; BRIGHT 1;"(
i*)": NEXT g
8600 RETURN
9000 FOR n=0 TO 7: READ a: POKE
USR "a"+n,a
9100 DATA 0,62,79,255,255,255,12
6,0
9200 NEXT n
9300 FOR n=0 TO 7: READ a: POKE
USR "b"+n,a
9400 DATA 0,0,240,252,254,255,15
,7
9500 NEXT n
9600 FOR n=0 TO 7: READ a: POKE
USR "c"+n,a
9700 DATA 7,31,255,252,240,224,0
,0
9800 NEXT n
9999 RETURN

```

```

10 BEEP .5,0
20 BEEP .2,2
30 BEEP .2,5
40 BEEP .2,4
50 BEEP .2,2
60 BEEP .35,7
70 BEEP .3,7
75 PAUSE 5
80 BEEP .2,7
90 BEEP .2,9
100 BEEP .2,4
110 BEEP .2,5
120 BEEP .35,2
130 BEEP .3,2
135 PAUSE 5
140 BEEP .2,2
150 BEEP .2,5
160 BEEP .2,4
170 BEEP .2,2
180 BEEP .3,0
190 BEEP .35,12
200 BEEP .35,11
210 BEEP .35,9
220 BEEP .35,7
230 BEEP .35,5
240 BEEP .35,4
250 BEEP .35,2
260 BEEP .45,0

```

Play the famous Can Can tune with this simple program written for the Spectrum or Spectrum Plus by Anthony Haas of Yate, Bristol.

```

270 BEEP .2,2
280 BEEP .2,5
290 BEEP .2,4
300 BEEP .2,2
310 BEEP .35,7
320 BEEP .35,7
330 BEEP .2,7
340 BEEP .2,9
350 BEEP .2,4
360 BEEP .2,5
370 BEEP .35,2
380 BEEP .35,2
390 BEEP .2,2
400 BEEP .2,5
410 BEEP .2,4
420 BEEP .2,2
430 BEEP .2,0
440 PRINT AT 11,4; FLASH 1; IN
K 3;"PRESS ANY KEY TO RUN AGAIN"
450 PAUSE 0
460 GO TO 10

```

CAN CAN



LISTING



Seb Coe

Up to three players can race to beat each other's time in Sebastian Coe. Move Sebastian's right and left legs alternately by pressing keys one and two. Run from one side of the screen to the other. It does not look far, but it is as taxing as the 1500 metres!

Written for the Spectrum or Spectrum Plus by Andrew Toumazou of West London.

```
10 BORDER 4: PAPER 4: INK 0: C
LS
15 GO SUB 4000
18 LET SC=0
19 LET N1=0
20 LET X=40
30 LET Y=60
35 LET H=0
50 FOR T=60 TO 100
60 PLOT 0,126: DRAW 110,0: DRA
W 0,22: DRAW -110,0: DRAW -0,-22
70 PLOT 0,175: DRAW 110,0: DRA
W -0,-22: DRAW -110,-0: DRAW 0,2
2
```

```
80 PLOT 113,175: DRAW 142,0: D
RAW -0,-50: DRAW -142,-0: DRAW 0
,50
```

```
90 PRINT AT 1,1;"TIME:"; AT 1
,8;H
100 PRINT AT 1,15;"NUMBER 1";
AT 3,15;"NUMBER 2"; AT 5,15;"NUM
BER 3"
110 PRINT AT 1,24;"000"; AT 3,
24;"000"; AT 5,24;"000"
120 IF SC=0 THEN PRINT AT 4,1
; INK 0;"ATHELETE (1)"
130 IF SC=1 THEN PRINT AT 4,1
; INK 0;"ATHELETE (2)"
140 IF SC=2 THEN PRINT AT 4,1
; INK 0;"ATHELETE (3)"
150 IF SC=3 THEN GO TO 4200
160 PRINT AT 20,0; INK 1; PAPE
R 6;"(4*isp;q5:5*isp;q5:5*isp;q5
:5*isp;q5:5*isp;q5:3*isp)"
190 FOR A=13 TO 19
195 PRINT AT A,0;"
```

```
"": NEXT A
200 CIRCLE X,Y,5: PLOT X-4,Y-7:
DRAW 8,0: DRAW -0,-20: DRAW -8,
-0: DRAW 0,20
205 PLOT X-3,Y-29: DRAW 6,0: DR
AW 9,-6: DRAW -6,-5: DRAW 4,-3:
DRAW -7,-0: DRAW -2,3: DRAW 5,5:
DRAW -4,3: DRAW -3,-0: DRAW -4,
-7: DRAW -5,-0: DRAW -0,-4: DRAW
-3,6: DRAW 4,1: DRAW 4,7
206 PLOT X-5,Y-9: DRAW -4,-4: D
RAW 4,-4: DRAW 0,3: DRAW -2,2: P
LOT X-1,Y-10: DRAW 9,-6: DRAW -0
,-4: DRAW -9,6
300 IF INKEY$="2" THEN LET X
=X+2: LET T=T+.5: LET H=H+1: PRI
NT AT 1,8;H: GO TO 2000
320 LET H=H+1: PRINT AT 1,8;H
```

```
1000 GO TO 200
2000 FOR A=10 TO 19
2001 PRINT AT A,0;"
": NEXT A
2009 CIRCLE X,Y,5: PLOT X-4,Y-7:
DRAW 8,0: DRAW -0,-20: DRAW -8,
-0: DRAW 0,20
2010 PLOT X-3,Y-29: DRAW 6,0: DR
AW 8,-10: DRAW 5,0: DRAW -0,-2:
DRAW -8,-0: DRAW -8,10: DRAW -6,
-5: DRAW -8,-0: DRAW -0,-5: DRAW
-3,-0: DRAW 0,7: DRAW 7,0: DRAW
3,4
2015 PLOT X-1,Y-9: DRAW -8,-9: D
RAW 10,0: DRAW 0,3: DRAW -4,-0
2020 PLOT X+4,Y-9: DRAW 5,6: DRA
```

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```
W -0,-4: DRAW -5,-6
2040 IF T >= 100 AND SC=0 THEN
PRINT AT 1,27;N1+H: LET SC=SC+1
: PRINT AT 1,8;" ": BEEP .6,1
5: BEEP .2,15: BEEP .4,15: BEEP
.2,10: BEEP .2,15: BEEP .4,15: B
EEP .5,15: BEEP .6,15: BEEP .5,1
5: BEEP .2,15: BEEP .4,15: BEEP
.2,10: GO TO 20
2050 IF T >= 100 AND SC=1 THEN
PRINT AT 3,27;N1+H: LET SC=SC+1
: PRINT AT 1,8;" ": BEEP .6,15
: BEEP .2,15: BEEP .4,15: BEEP .
2,10: BEEP .6,15: BEEP .2,15: BE
EP .4,15: BEEP .4,15: BEEP .2,
10: BEEP .2,15: BEEP .4,15: BEEP
BEEP .2,15: BEEP .4,15: BEEP .2,
.5,15: BEEP .6,15: BEEP .5,15:
10: GO TO 20
2060 IF T>100 AND SC=2 THEN PRI
NT AT 5,27;N1+H: LET SC=SC+1: P
RINT AT 1,8;" ": GO TO 20
2100 IF INKEY$="1" THEN LET X
=X+2: LET T=T+.5: LET H=H+1: PRI
NT AT 1,8;H: GO TO 190
2110 IF INKEY$="Y" THEN CLS :
GO TO 1
2120 IF INKEY$="N" THEN CLS :
STOP
2300 LET H=H+1
2400 PRINT AT 1,1;"TIME:"; AT 1
,8;H
3000 GO TO 2009
4000 PRINT AT 2,7; INK 1;"SEBAS
TIAN COE'S"
4010 PRINT AT 4,9; INK 1;"100 M
ETRES"
4020 PRINT AT 8,7; INK 0;"KEYBO
ARD"; AT 10,7; INK 7;"1:LEFT LEG
"; AT 12,7;"2:RIGHT LEG"
4030 PRINT AT 14,7; INK 7;"INTE
RFACE 2"
4100 PAUSE 0: FOR a=0 TO 50: BEE
P .002,a: NEXT a: CLS : GO TO 17
```

```
4200 PRINT AT 21,9;"ANOTHER GAM
E(Y/N)"
4210 IF INKEY$="y" OR INKEY$
="Y" THEN CLS : GO TO 16
4220 IF INKEY$="n" OR INKEY$
="N" THEN CLS : STOP
5000 GO TO 4200
```

ARGON LANDER

You must land on the planet Argon without hitting any of the many asteroids in the asteroid belt. If you do succeed in landing you will be propelled into the upper atmosphere and forced to restart your descent again and again. How many times can you land successfully? We could only manage one successful landing in the Sinclair Programs office.

Argon Lander was written for the 16K ZX-81 by Anthony Hill of Bradford, West Yorkshire.

```
1 GOSUB 9000
5 POKE 16418,0
9 LET S=0
10 LET N=INT (RND*50)+20
20 FAST
30 FOR L=1 TO N
40 PRINT AT (RND*20), (RND*30);
" "
50 NEXT L
60 SLOW
70 PRINT AT 21,0;"
"
80 LET C=INT (RND*29)
90 PRINT AT 20,C;" "
100 LET A=0
```

```
110 LET B=INT (RND*32)
120 PRINT AT A,B;" "
130 FOR N=1 TO 10
140 NEXT N
150 PRINT AT A,B;
160 LET P=PEEK (PEEK 16398+256*
PEEK 16399)
170 IF P=CODE "*" THEN GOTO 300
180 IF P=CODE " " THEN GOTO 300
190 IF P=CODE " " OR P=CODE " "
THEN GOTO 400
200 PRINT " "
210 PRINT AT A,B;" " AT A,B;" "
220 LET A=A+1
230 LET P=PEEK 16422
240 IF P=223 THEN LET B=B-1
250 IF P=247 THEN LET B=B+1
260 IF P=207 THEN GOSUB 1010
270 IF P=231 THEN GOSUB 1100
280 IF P=239 THEN LET A=A-2
285 LET S=S+P
290 GOTO 150
300 POKE 16424,0
301 FOR N=A TO 20
302 PRINT AT N,B;" " AT N-1,B;" "
303 NEXT N
304 POKE 16424,32
305 POKE 16424,2
309 FOR N=1 TO 50
310 PRINT AT 10,10;"GAME OVER"
320 NEXT N
330 PRINT AT 21,0;"SCORE:";S
340 PRINT AT 14,2;"PRESS ANY KE
Y TO PLAY AGAIN"
350 IF INKEY$=" " THEN GOTO 350
CLS
370 GOTO 9
400 FOR N=1 TO 63
410 PRINT AT A-1,B;CHR$ N
420 NEXT N
430 PRINT AT A-1,B;" "
440 FOR N=18 TO 0 STEP -1
450 PRINT AT N,B;
455 LET P=PEEK (PEEK 16398+256*
PEEK 16399)
460 IF P=CODE "*" THEN GOTO 300
470 PRINT " "
480 PRINT AT N+1,B-1;" "
490 LET B=B+.4*(INKEY$="8")-.4*
(INKEY$="5")
495 LET A=A-1
500 NEXT N
505 LET S=S+INT (RND*255)+10
507 CLS
510 GOTO 10
1000 LET B=B-1
1010 LET A=A-2
1020 RETURN
1110 LET B=B+1
1112 LET A=A-2
1130 RETURN
9000 PRINT AT 0,10;"ARGON LANDER"
9001 PRINT AT 1,10;"
"
9010 PRINT AT 4,0;"FLYING A PLAN
ET HOPPER,AS-32"
9020 PRINT AT 6,0;"TYPE.YOU HAVE
TO LAND ON PLANET " AT 8,0;"ARG
ON." AT 10,0;"BUT THIS PLANET IS
SURROUNDED BY"; AT 12,0;"ASTEROID
S."
9030 PRINT AT 14,0;"IF YOU HIT 0
NE YOU WILL DIE...."
9040 PRINT AT 16,0;"IF YOU MANAG
E TO LAND THEN YOU " AT 18,0;"MU
ST TAKE OFF AGAIN..."
9050 PRINT AT 20,2;"PRESS ANY KE
Y TO CONTINUE"
9060 IF INKEY$=" " THEN GOTO 9060
9070 CLS
9080 PRINT AT 2,0;"BY THE WAY,TH
E KEYS USED ARE AS " AT 4,0;"FOL
LOWS."
9090 PRINT AT 6,5;"S=LEFT "
9100 PRINT AT 8,5;"S=RIGHT "
9110 PRINT AT 10,5;"S=THRUST"
9120 PRINT AT 12,5;"S AND S=THRU
ST AND LEFT"
9130 PRINT AT 14,5;"S AND S=THRU
ST AND RIGHT"
9140 FOR N=1 TO 200
9250 NEXT N
9260 CLS
9270 RETURN
9998 SAVE "PLANE"
9999 GOTO 1
```


tír na nòg



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CARNIVAL

At the carnival you spy the coconut shy. Rows of objects rotate on the screen above you, and must be knocked off using a very limited number of coconuts. Can you knock off all the objects using the coconuts available?

Carnival was written for the 16K ZX-81 by Anthony Hill of Bradford, West Yorkshire.

```

1 LET L$="Z"
2 LET R$="X"
3 LET F$="F"
6 LET S=0
8 GOSUB 1000
10 PRINT AT 0,10;"CARNIVAL II"
15 PRINT AT 1,0;"
20 LET AM=31

```

[illegible]

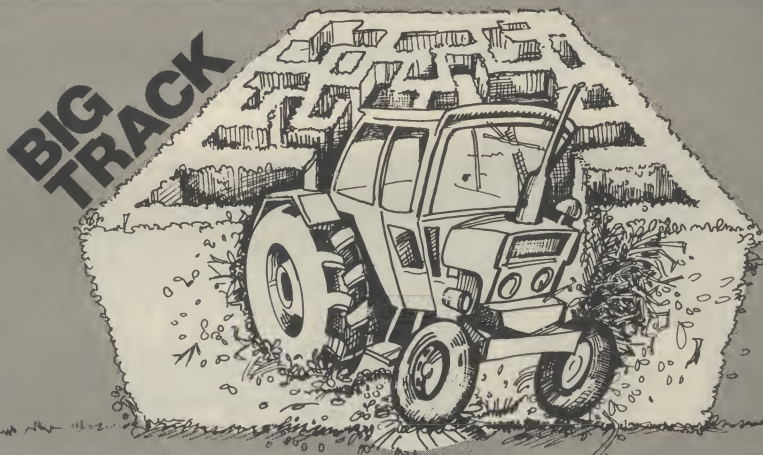
```

+0005 IF B$(A+1)="U" THEN LET S=S
+0010 THEN LET S=S
+0015 LET B$(A+1)=" "
+0020 GOTO 330
+0025 IF A$(A+1)=" " THEN GOTO 33
0
+0045 IF A$(A+1)="■" THEN LET S=S
+0050
+0055 IF A$(A+1)="▣" THEN LET S=S
+0060
+0065 IF A$(A+1)="U" THEN LET S=S
+0070
+0075 IF A$(A+1)="U" THEN LET S=S
+0080
+0085 LET A$(A+1)=" "
+0090 LET AM=AM-1
+0095 GOTO 100
+0100 LET S=S+AM*AM
+0105 PRINT AT 19,A;" "
+0110 GOTO 10
+0115 PRINT AT 0,10;"CARNIVAL 10"
;AT 1,10;"~~~~~"
+0120 PRINT AT 4,0;"LEFT...";L$
+0125 PRINT AT 6,0;"RIGHT...";R$
+0130 PRINT AT 8,0;"FIRE...";F$
+0135 PRINT AT 12,3;"PRESS R TO R
REDEFINE KEYS"
+0145 PAUSE 4E4
+0150 IF INKEY$="R" THEN GOSUB 20
00
+0155 CLS
+0160 RETURN
+0165 CLS
+0170 PRINT AT 0,10;"REDEFINE KEY
S";AT 1,10;"~~~~~"
+0175 PRINT AT 6,0;"?..KEY TO PER
LAGE LEFT
+0180 INPUT L$
+0185 PRINT AT 6,0;"
+0190 PRINT AT 8,0;"?..KEY TO REP
LAGE RIGHT"
+0195 INPUT R$
+0200 PRINT AT 8,0;"
+0205 PRINT AT 10,0;"?..KEY TO RE
PLACE FIRE"
+0210 INPUT F$
+0215 PRINT AT 10,0;" PRESS ANY
KEY TO CONTINUE"
+0220 IF INKEY$="" THEN GOTO 2090
+0225 CLS
+0230 RETURN
+0235 PRINT AT 12,10;"GAME OVER"
+0240 FOR N=1 TO 100
+0245 NEXT N
+0250 CLS
+0255 PRINT AT 10,0;"YOUR SCORE I
S"
+0260 PRINT AT 14,0;"PRESS ANY KE
Y TO PLAY AGAIN"
+0265 IF INKEY$="" THEN GOTO 9050
+0270 CLS
+0275 GOTO 6
+0280 SAVE "CARNIV"
+0285 GOTO 1

```

The engineers' enormous tractor must make its way through the maze on screen. Because it leaves such enormous tracks behind it, it has been decided that its route should be programmed in advance in order to avoid churning up the ground any more than is necessary. Give directions to **Big Track** for the entire route and then watch to see whether you will make it through the maze.

Written for the 16K ZX-81 by
Anthony Hill of Bradford, West
Yorkshire.



```

1000 GOSUB 9000
1010 CLS
1020 PRINT AT 0,0;"INPUT DIFFICU
LT 1030 (100 TO 500)";
1040 INPUT D
1050 IF D>500 OR D<100 THEN GOTO
8
1060 CLS
1070 FAST
1080 FOR N=1 TO D
1090 PRINT AT (RND*20),(RND*31);
"■";
1100 NEXT N
1110 SLOW
1120 LET B=INT (RND*31)
1130 PRINT AT 21,B;"□";
1140 PRINT AT 0,0;"INPUT DIRECTI
ON 1150 PROGRAMM.
1160 PRINT AT 1,0;"THEN ENTER ""
RUN"" TO RUN."
1170 LET A$=""
1180 INPUT N$
1190 IF N$="RUN" THEN GOTO 150
1200 LET A$=A$+N$
1210 GOTO 100

```

```

150 PRINT AT 0,0;"
      ";AT 1,0;"
160 LET A=21
170 FOR N=1 TO LEN A$
180 PRINT AT 1,0;"
      ";AT 1,0;"
190 IF PEEK (PEEK 16398+256*PEE
300) = 128 THEN GOTO 300
200 PRINT "R"
210 PRINT AT A,B;"R";AT A,B;"R"
220 LET A=A+(A$(N)="B")-(A$(N)=
    )
230 LET B=B+(A$(N)="R")-(A$(N)=
    )
240 IF A<3 THEN GOTO 260
250 NEXT N
260 GOTO 90
270 PRINT AT 1,0;"TIME TAKEN ";N
280 PRINT AT 10,2;"PRESS ANY KE
Y TO PLAY AGAIN"
290 PAUSE 1E4
300 GOTO 3
310 PRINT AT A,B;"R"
320 FOR N=1 TO 30
330 NEXT N
340 CLS

```

```

340 PRINT AT 10,10;"GAME OVER"
350 FOR N=1 TO 40
360 NEXT N
370 PRINT AT 10,0;" PRESS ANY
380 KEY TO PLAY AGAIN"
390 PAUSE 4E4
390 GOTO 8
0000 PRINT AT 0,10;"BIG TRACK"
0010 PRINT AT 1,10;"XXXXXXXXXXXXXXXXXXXX"
0020 PRINT AT 4,0;"YOU HAVE TO P
PROGRAM BIG TRACK TO:" AT 6,0;"MAN
OVER ROUND THE OBSTACLES."
0030 PRINT AT 8,0;"BUT DONT HIT
ANY THING OR THIS " AT 10,0;"WIL
L RESULT IN A MOUTFUNCTION."
0040 PRINT AT 14,0;"ENTER F(FORW
ARD),B(BACK),W(WARDS) AT 15,0;"L(L
EFT),R(RIGHT)."
0050 PRINT AT 18,0;" PRESS ""
R"" TO CONTINUE."
0060 PAUSE 4E4
0070 IF INKEY$="R" THEN RETURN
0080 GOTO 0060
9998 SAVE "BIG T"
9999 GOTO 1

```


Snails

Your snail and the computer's snail each move around a board, leaving a slimey trail. Contact with another snail or with any slime means death. Can you trap the computer's snail before it traps you?

Snails was written for the Spectrum or Spectrum Plus by Sven Knowles of Burley in Wharfedale, West Yorkshire.

```

10 BEEP .1,1: BORDER 0: PAPER
0: INK 6: CLS
15 GO TO 9000
20 LET h1=0
30 GO SUB 8000
40 LET a$= INKEY$
50 IF a$>"8" OR a$<"5" THEN G
O TO 70
60 LET m= VAL a$: LET j=0
70 LET h1=h1+(m=6)-(m=7)
80 LET h2=h2+(m=8)-(m=5)
90 LET b$= SCREEN$ (h1,h2)
100 BEEP .005,10
110 IF b$="-" THEN GO SUB 2000

120 LET j=1: PRINT AT h1,h2; I
NVERSE 1;"-"
130 PRINT AT h1,h2; INVERSE 1;
INK 6;"-"
140 LET u=0
150 IF u=5 THEN GO SUB 1000
160 LET c3=c1: LET c4=c2
170 LET c1=c1+(n=6)-(n=7)
180 LET c2=c2+(n=8)-(n=5)

```

```

190 LET c$= SCREEN$ (c1,c2)
200 IF c$="-" THEN LET n=u+5:
LET c1=c3: LET c2=c4: LET u=u+1:
GO TO 150
220 PRINT AT c1,c2; INVERSE 1;
"-"
240 GO TO 40
1000 PRINT AT c1,c2; FLASH 1;"-"
"
1010 LET hs=hs+1: FOR p=1 TO 30:
BEEP .008,p: NEXT p
1020 PRINT AT 0,0;"SCORE COMP "
;cs;" human ";hs
1030 PRINT INVERSE 1;"-----"
1040 FOR l=1 TO 19
1050 PRINT INVERSE 1;"_"; INVER
SE 0;"
"; INVERSE 1;"_"
1060 NEXT l
1070 PRINT INVERSE 1;"-----"
1080 LET c1=10: LET c2=10
1090 LET h1=10: LET h2=20
1100 IF hs=10 THEN GO TO 3000

1110 RETURN
2000 PRINT AT h1,h2; FLASH 1;"-"
"
2010 LET cs=cs+1: FOR p=1 TO 30:
BEEP .008,p: NEXT p
2020 PRINT AT 0,0;"SCORE COMP "
;cs;" HUMAN ";hs
2030 PRINT INVERSE 1;"-----"
2040 FOR l=1 TO 19
2050 PRINT INVERSE 1;"_"; INVER
SE 0;"
"; INVERSE 1;"_"
2060 NEXT l
2070 PRINT INVERSE 1;"-----"
2080 LET c1=10: LET c2=10
2090 LET h1=10: LET h2=20
2100 IF cs=10 THEN GO TO 3000

2110 RETURN
3000 PRINT AT 5,8;("COMPUTER "
AND cs>hs)+("HUMAN " AND hs>cS);

```



```

"WINS!!"
3010 INPUT "Press ENTER to play
again "; LINE a$
8000 LET j=1: LET c1=10: LET c2=
10
8010 LET h1=10: LET h2=20
8020 LET hs=0: LET cs=0
8030 BORDER 0: PAPER INT ( RND
*6): INK 9: CLS
8040 PRINT "SCORE ";
8050 PRINT "COMP 00 HUMAN 00"
8060 PRINT INVERSE 1;"-----"
8070 FOR l=1 TO 19
8080 PRINT INVERSE 1;"_"; TAB 3
1; INVERSE 1;"_"
8090 NEXT l
8100 PRINT INVERSE 1;"-----"
8110 LET m=5: LET n=8: RETURN
9000 PRINT AT 1,12;"SNAILS"
9010 PRINT AT 3,0;" TRAP THE O
THER SNAIL WITH OUTHITTING YOUR
OWN TRACK, THE SIDOR THE OTHE
R SNAILS TRACK."
9020 PRINT
9030 PRINT "          5      LEFT
          6      DOWN
          7      UP
          8      RIGHT
"
9040 PRINT AT 20,10; INK 2; FLA
SH 1;"PRESS ENTER": PRINT "
TO START": INPUT v$
9050 GO TO 20

```

Across the rocky cliffs fly the mutant lizards, bent on terror and destruction. Move up and down with keys 6 and 7 and shoot as many mutants as you can using key zero.

Landscape of Fear was written for the Spectrum or Spectrum Plus by Paul Noakes of Kingswinford, West Midlands. Underlined characters are those to be entered in graphics mode.



```

5 LET H=0: LET D=1: BORDER 0:
PAPER 0: INK 6: BRIGHT 1: CLS

6 LET S=0: LET T=0: LET X=10:
POKE 23658,255: POKE 23613,0
10 RESTORE 11: FOR N=USR "A"
TO USR "B"+7: READ A: POKE N,A:
NEXT N: IF D=1 THEN GO SUB 90

11 DATA 0,0,64,96,126,127,240,
0,200,236,126,255,255,254,127,3

```

```


12 PRINT AT X,2; INK 3;"A": F
OR G=3 TO 0 STEP -1: PRINT AT 0
,0; INK 4;"SHIP:"; INK 5;G;" SCO
RE:"; INK 6;S; INK 6;" HIGH:";
INK 7;H;" "
13 LET A= INT ( RND *14): FOR
B= INT ( RND *20)+11 TO 0 STEP -
1-.5*(S>3000)-.5*(S>6000): PRINT
OVER 1; INK INT ( RND *6)+1;
AT A,B;"B"
15 IF INKEY$ <> "" THEN PRI
NT AT X,2;" ": LET X=X+( INKEY$
="6" AND X<14)-( INKEY$ ="7" AN
D X>1): PRINT AT X,2; INK 3;"A"
16 IF INKEY$ ="0" THEN IF B>
2 THEN PLOT OVER 1;25,2+8*(21-
X): DRAW INK INT ( RND *6)+1;
OVER 1;230,0: BEEP .007,0: BEEP
.005,20: BEEP .003,40: DRAW OVE
R 1;-231,0: IF X=A THEN LET S=S
+ INT B+10: PRINT AT 0,0; INK 4
;"SHIP:"; INK 2;G; INK 5;" SCORE
:"; INK 6;S; INK 6;" HIGH:"; I
NK 7;H;" ": BEEP .05,-30: BEEP .
07,-40: BEEP .09,-50: PRINT AT
A,B;" ": GO TO 13
18 IF INKEY$ =" " THEN FOR Y=
1 TO 3: NEXT Y
20 IF B<4 THEN GO TO 32

```

```

22 IF INKEY$ <> "" THEN PRI
NT AT X,2;" ": LET X=X+( INKEY$
="6" AND X<14)-( INKEY$ ="7" AN
D X>1): PRINT AT X,2; INK 3;"A"
25 IF INKEY$ =" " THEN FOR Y=
1 TO 3: NEXT Y
28 PRINT OVER 1; AT A,B;"B":
LET A=A+( RND <.4 AND A<14)-( RND
>.6 AND A>1): NEXT B
30 LET S=S-10: LET T=T+1: PRIN
T AT 0,13; INK 6;S;" ": GO TO 1
3
32 IF X <> A OR B<2 THEN GO T
O 22
35 PRINT AT X,2; FLASH 1; INK
2;"B": PRINT AT X,3;" ": BEEP
.1,-50: BEEP .1,-( RND *5)-10:
BEEP .2,-30: BEEP .1,-40: PRINT
AT X,2; INK 3;"A"
40 NEXT G: PRINT AT X,2;" ":
PRINT AT 10,10; INK 2;"GAME OVE
R"; AT 12,1;"YOU LET ";T;" ASTER
OIDS THROUGH": FOR X=1 TO 350: N
EXT X
41 PRINT AT 10,10; OVER 1; IN
K 2;"GAME OVER"; AT 12,1;"YOU LE
T ";T;" ASTERIDS T' DUSH"
45 IF H<S THEN S=S
46 PAUSE 0: GO TO 5
90 LET D=0: LET y=28: PLOT 0,2
8: FOR a=0 TO 14
100 LET DY= INT ( RND *56)-Y
110 DRAW 16,DY
120 LET Y=Y+DY
130 NEXT A
140 DRAW 15,28-Y
185 FOR N=1 TO 70: PLOT RND *2
55, RND *175: NEXT N
190 RETURN

```

1 Knight Lore	Ultimate
2 Decathlon	Ocean
3 Lords of Midnight	Beyond
4 Matchday	Ocean
5 Hobbit	Melbourne House
6 Manic Miner	Software Projects
7 Sabre Wulf	Ultimate
8 Skooldaze	Microsphere
9 Doomdark's Revenge	Beyond
10 Underwurlde	Ultimate

↑ HEIGHTS

↓ DEPTHS

1 Make a Chip	Sinclair
2 Transylvanian Tower	Richard Shepherd
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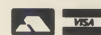
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